PORT OF LOS ANGELES
Inventory of Air Emissions 2021

Technical Report | September 2022

THE PORT OF LOS ANGELES

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

Inventory of Air Emissions for Calendar Year 2021

Prepared for:

THE PORT OF LOS ANGELES

APP#211208-544 A

September 2022

Prepared by:

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

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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
Larry Reeves, 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.
H.J. Yoon, 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
Brian Choe, South Coast Air Quality Management District
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:

Christine Batikian, Project Manager
Amber Coluso
Tim DeMoss
Teresa G. Pisano
Jacob Goldberg
Lisa Wunder

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Third party review: Randall Pasek, PhD

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 Methodology Report is available on the Port's website.[1] This 2021Air Emission Inventory correlates with Version 3 of the Methodology Report.

Please note that in 2021, emissions from articulated tug barges (ATB) are removed from the ocean-going vessels category and added to the harbor craft category. This change, along with revisions to harbor craft emissions estimation methodology, are made per California Air Resources Board latest adoption of amendments to the Commercial Harbor Craft Regulation (2022 CARB CHC regulation amendment) which defined ATBs as commercial harbor craft.

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).

Summary of 2021 Activity and Emission Estimates

In 2021, record cargo volumes, supply chain disruptions, and COVID-19 restrictions that reduced working capacity at the docks resulted in unprecedented levels of supply chain congestion, which in turn led to the highest levels of emissions seen at the Port in more than 10 years. In 2021, the Port of Los Angeles reported a record cargo volume of 10.7 million twenty-foot equivalent units (TEUs). Following the 2020 shutdowns due to COVID-19, a wave of consumerism ensued which triggered a cargo surge in the latter part of 2020 and continued throughout 2021. Numerous supply chain disruptions[2] that started during the COVID-19 shutdowns, continued through 2021, such as lack of chassis, too many empty containers at the terminals, not enough warehouse space inland, and workers out sick or in quarantine due to COVID-19. Further, in order to protect workers during the COVID-19 pandemic, limits on the number of gangs that could work a vessel continued in 2021. All of these factors resulted in longer vessel stays at berth, as it took the terminals more time to load and unload vessels with fewer dockworkers per ship, and higher numbers of vessels at anchorage, as there were more vessels overall and long waits at anchorage for berths to become available. Vessel congestion and record container cargo throughput led to a ripple effect throughout the logistics chain, resulting in activity increases in cargo-handling equipment and truck activity as the system struggled to keep up.

[1] *www.portoflosangeles.org/environment/air-quality/air-emissions-inventory*
[2] *www.pmsaship.com/uncategorized/congestion-fact-sheet/*

This annual report, which tracks emissions from year to year, includes the anchorage and loitering emissions that occurred within the geographical domain in 2021. An analysis of Automatic Identification System (AIS) data was conducted to ensure all vessel activity at anchorage and loitering within the emissions inventory (EI) boundary was captured. Based on the high number of vessels off the coast of southern California in summer and fall of 2021, a new container vessel queuing process[3] was implemented mid-November 2021 to increase safety and improve air quality near the ports of Los Angeles and Long Beach. Because this process was adopted late in the year, its results may not be reflected in this report. The 2021 emissions increase are unprecedented for the Port and have resulted in NO_x and DPM emissions levels similar to 2009 and 2012, respectively, as shown in Figures ES.1 and ES.2. The predominant reason is ocean-going vessel emissions in 2021, in particular their emissions at anchorage.

Figure ES.1: NO_x Emissions Trend by Source Category

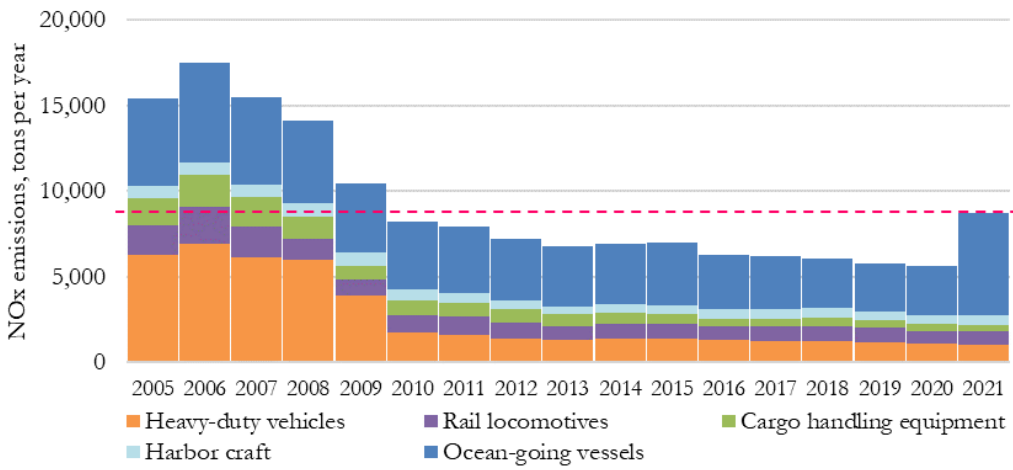
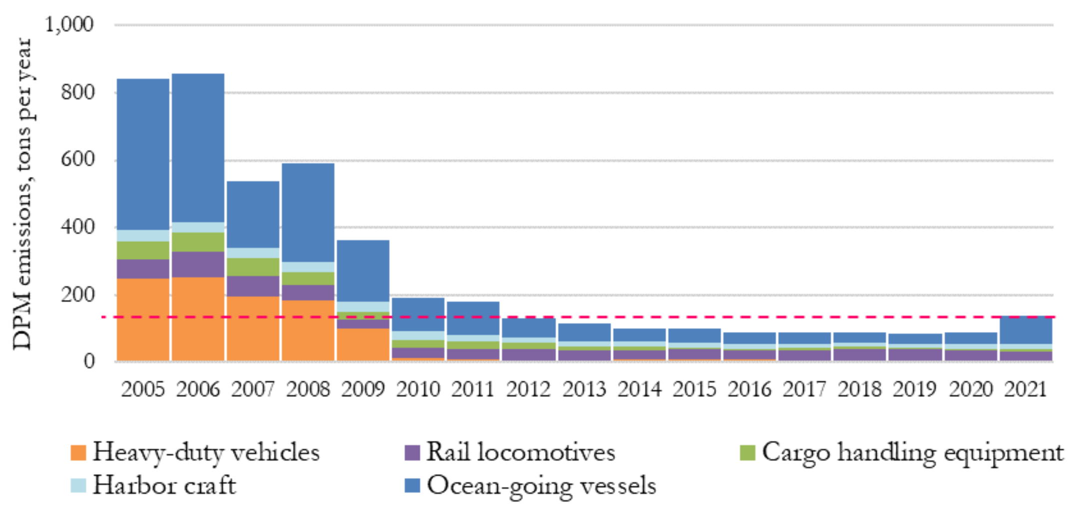


Figure ES.2: DPM Emissions Trend by Source Category



33 See: *www.mxsocal.org/*

Table ES.1 presents the number of vessel arrivals and the container cargo throughput for calendar years 2005, 2020, and 2021. The number of vessel arrival calls do not match previous year reports due to removal of ATBs from the ocean-going vessels source category and their addition to the commercial harbor craft (CHC) category, to be consistent with CARB's CHC regulation.

The cargo throughput increased 16% in 2021 as compared to the previous year. Containership arrivals decreased 5%, while the average TEU per call increased 21% as compared to the previous year.

Comparing 2021 to 2005, the TEU throughput increased 43%, containership arrivals decreased 35%, and the average TEU per call increased 128%. The decrease in containership calls with the significant increase in TEU per call handled shows the impact that larger containerships have made since 2005.

Table ES.1: Container Throughput and Vessel Arrivals Comparison

Year	TEUs	All Arrivals	Containership Arrivals	Average TEUs/Call
2021	10,677,610	1,609	924	11,556
2020	9,213,396	1,435	969	9,518
2005	7,484,625	2,458	1,479	5,061
Previous Year (2020-2021)	**16%**	**12%**	**-5%**	**21%**
CAAP Progress (2005-2021)	**43%**	**-35%**	**-38%**	**128%**

Table ES.2 summarizes the 2021 total 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 2021, approximately two thirds of the Port's PM and NO_x emissions were attributed to OGV.

Table ES.2: 2021 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	127	117	83	5,956	248	605	255	504,842
Harbor craft	15	15	15	565	1	112	29	53,521
Cargo handling equipment	6	6	5	414	2	780	86	184,837
Locomotives	27	25	27	751	1	187	42	65,216
Heavy-duty vehicles	6	6	6	1,042	4	356	52	444,814
Total	**182**	**168**	**136**	**8,729**	**255**	**2,040**	**464**	**1,253,229**

DB ID457

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 Port's contribution in the South Coast Air Basin increased in 2021 due to the increased emissions mainly resulting from supply chain congestion and supply chain disruptions which led to an unprecedented number of vessels waiting at anchorage as opposed to calling a berth directly.

Figure ES.3: 2021 PM_{10} Emissions in the South Coast Air Basin

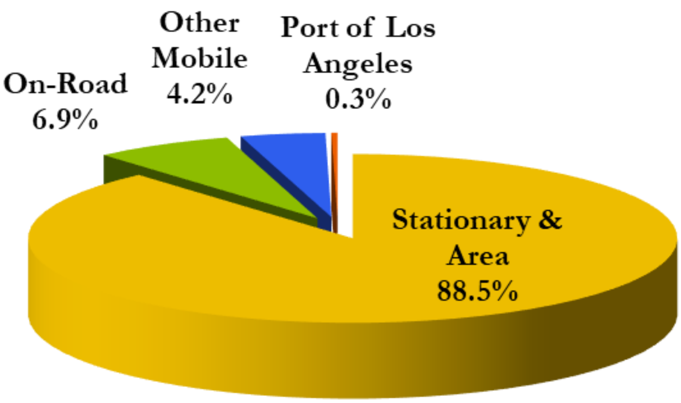


Figure ES.4: 2021 $PM_{2.5}$ Emissions in the South Coast Air Basin

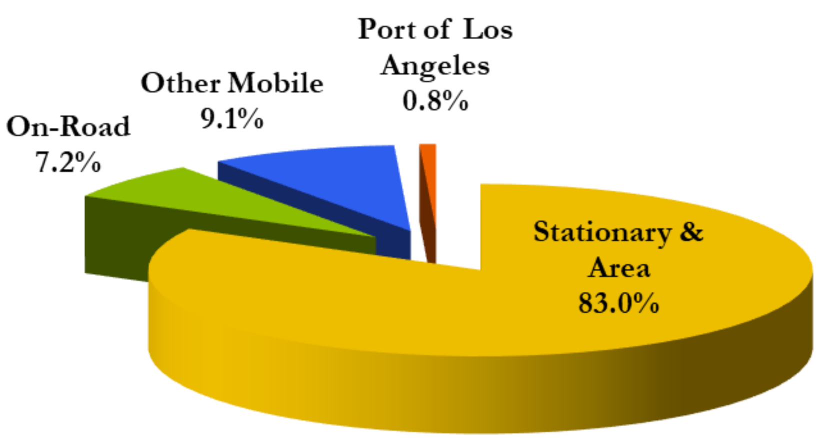


Figure ES.5: 2021 DPM Emissions in the South Coast Air Basin

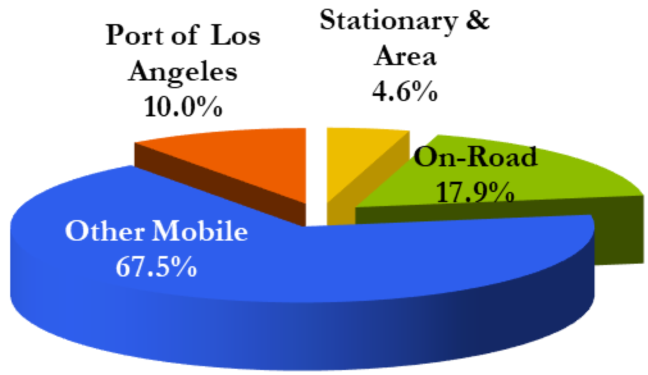


Figure ES.6: 2021 NO_x Emissions in the South Coast Air Basin

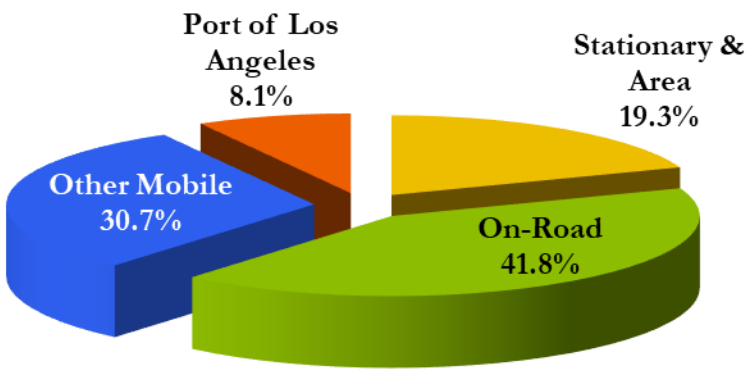
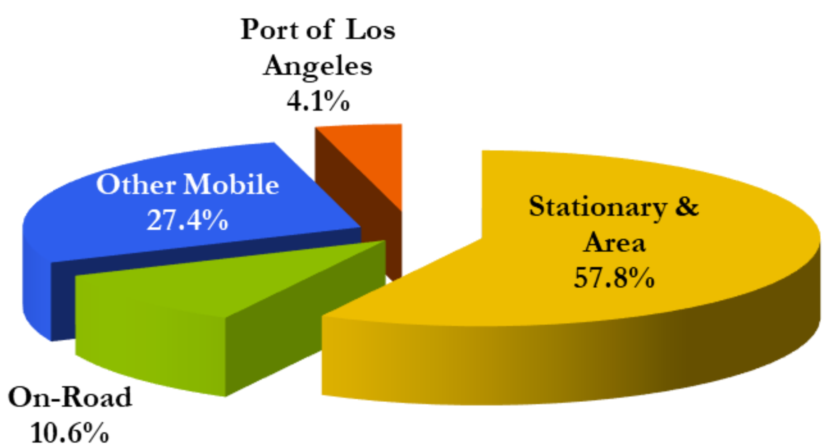


Figure ES.7: 2021 SO_x Emissions in the South Coast Air Basin



Comparison of 2021 Emissions to 2005 and 2020

Table ES.3 presents the total net change in emissions from all source categories in 2021 as compared to the previous year and to 2005, all using 2021 methodology. In order to maintain the consistency between the years compared, the previous years' emissions are recalculated whenever new estimation methodologies are introduced. Previous year emissions were re-estimated for harbor craft to be consistent with CARB's revisions for emissions estimation that were published in 2021 as part of the 2022 CARB CHC regulation amendment.

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
2021	182	168	136	8,729	255	2,040	464	1,253,229
2020	107	99	87	5,672	104	1,491	306	899,453
2005	1,001	861	840	15,459	4,839	3,601	813	1,017,549
Previous Year (2020-2021)	**69%**	**69%**	**56%**	**54%**	**145%**	**37%**	**52%**	**39%**
CAAP Progress (2005-2021)	**-82%**	**-80%**	**-84%**	**-44%**	**-95%**	**-43%**	**-43%**	**23%**

Comparison of 2021 Emissions by Source Category to 2020

Calendar year 2021 proved to be another challenging year for supply chain and goods movement which resulted in increased emissions as compared to the previous year. Supply chain disruptions and supply chain congestion resulted in significantly higher emissions for ocean-going vessels while at anchorage or loitering. The supply chain congestion and increase in anchorage calls for containerships was due in part to a continued increase in demand for consumer goods that started in late 2020 and continued throughout 2021. In 2021, to ensure the health and safety of workers during the COVID-19 pandemic, the limit on the number of work gangs used at berth continued from 2020. This measure led to increased vessel times spent at berth and anchorage. The major factors that resulted in significantly higher emissions included:

1) high number of vessels, mainly containerships, at anchorage or loitering.
2) larger containerships staying at berth longer than usual.
3) increased use of cargo handling equipment to keep up with container surge.
3) longer truck turn times at terminals.

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, emissions doubled in 2021 compared to 2020 primarily due to supply chain congestion with vessels visiting anchorages and staying longer than previous year(s) at record numbers. In addition to vessels waiting for a berth, once at berth, vessels spent longer time at berth for most vessel calls. The auxiliary engine and boiler emissions increased significantly in 2021.

- For harbor craft, activity was higher in 2021 compared to 2020 due to more crewboats visiting anchorages, more tugboats assisting with additional shifts from anchorage to berth, and increased activity for ferries and excursion vessels. There was an increased usage of older equipment (Tier 0) that resulted in an increase for most pollutants, however, usage of cleaner engines also increased resulting in slightly lower NO_x emissions.
- For CHE, the higher emissions are due to increased activity as equipment were used more in 2021 than in 2020 to keep up with the 16% TEU cargo increase. In 2021, some terminal operators switched to renewable diesel which lowers CO_2e tailpipe emissions.
- For locomotives, the decreases were due to reductions in the line haul fleet composite emission factors resulting from line haul fleet mix improvement, and the replacement of older switching locomotives with new low-emission and ultra-low emission switchers.
- For heavy-duty vehicles, the emissions decreased due to continued fleet turnover to newer trucks in 2021. The share of mileage driven by 2014 and newer model year trucks increased from 34% in 2020 to 48% in 2021.

Table ES.4 presents the 2021 and 2020 emissions comparison by source category. Emissions increased across the board for all source categories, except for locomotives. Ocean-going vessels increased significantly due to supply chain congestion.

Table ES.4: Maritime Industry-related 2021-2020 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
2021								
Ocean-going vessels	127	117	83	5,956	248	605	255	504,842
Harbor craft	15	15	15	565	1	112	29	53,521
Cargo handling equipment	6	6	5	414	2	780	86	184,837
Locomotives	27	25	27	751	1	187	42	65,216
Heavy-duty vehicles	6	6	6	1,042	4	356	52	444,814
Total	**182**	**168**	**136**	**8,729**	**255**	**2,040**	**464**	**1,253,229**
2020								
Ocean-going vessels	52	48	34	2,879	97	273	127	213,981
Harbor craft	14	13	14	571	0	111	26	52,325
Cargo handling equipment	6	5	4	366	2	643	66	165,961
Locomotives	29	27	29	786	1	189	45	65,987
Heavy-duty vehicles	6	6	6	1,071	4	274	41	401,199
Total	**107**	**99**	**87**	**5,672**	**104**	**1,491**	**306**	**899,453**
Change between 2020 and 2021 (percent)								
Ocean-going vessels	143%	143%	147%	107%	154%	121%	101%	136%
Harbor craft	11%	12%	11%	-1%	2%	2%	9%	2%
Cargo handling equipment	12%	12%	11%	13%	12%	21%	29%	11%
Locomotives	-8%	-8%	-8%	-4%	-1%	-1%	-6%	-1%
Heavy-duty vehicles	0%	0%	0%	-3%	10%	30%	27%	11%
Total	**69%**	**69%**	**56%**	**54%**	**145%**	**37%**	**52%**	**39%**

Additional Comparison of 2021-2020 OGV Emissions

In 2021, out of all the source category emissions, OGVs account for 70% of the DPM and 68% of NO_x emissions. The following text provide more context to why the OGV emissions were significantly higher in 2021. Table ES.5 presents the comparison of 2021-2020 OGV emissions by mode showing particularly higher emissions for hotelling at berth and at anchorage. The auxiliary engines and auxiliary boilers are used at berth and at anchorage. The propulsion engines which have the highest loads are used during transiting and maneuvering, but not at berth or at anchorage.

Table ES.5: 2021-2020 OGV Emissions Comparison by Mode

Mode	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e tonnes
2021								
Total Transit	17	16	17	1,544	32	135	70	62,263
Total Maneuvering	4	4	4	296	7	33	22	13,242
Total Hotelling at-berth	38	35	17	1,222	83	137	50	164,256
Total Hotelling at-anchorage	67	62	45	2,894	127	300	112	265,081
Total	**127**	**117**	**83**	**5,956**	**248**	**605**	**255**	**504,841**
2020								
Total Transit	14	13	13	1,394	24	112	60	55,011
Total Maneuvering	3	3	3	217	4	23	17	9,270
Total Hotelling at-berth	24	22	10	795	50	91	33	108,000
Total Hotelling at-anchorage	11	10	7	473	20	48	18	41,700
Total	**52**	**48**	**34**	**2,879**	**97**	**273**	**127**	**213,981**
Change between 2020 and 2021 (percent)								
Total Transit	22%	22%	26%	11%	30%	21%	17%	13%
Total Maneuvering	48%	46%	49%	37%	71%	42%	36%	43%
Total Hotelling at-berth	57%	57%	64%	54%	66%	51%	55%	52%
Total Hotelling at-anchorage	533%	534%	527%	512%	545%	527%	528%	536%
Percent change, %	**143%**	**143%**	**147%**	**107%**	**155%**	**121%**	**101%**	**136%**

Containerships account for approximately 57% of the calls in 2021 and over 68% of the vessel NO_x and PM emissions. Table ES.6 and Figure ES.8 compare the average days at anchorage for containerships in 2020 and 2021. On average, containerships spent more time at anchorage in 2021 than in 2020 which resulted in higher emissions for hotelling at anchorage in 2021. The 4,000 and 8,000 TEU containerships had the most vessels at anchorage and their average time spent at anchorage almost doubled in 2021 (6 days) from 2020 (3 days). Waiting at anchorage for a long period is not the norm, particularly for containerships that would not normally stop at anchorage.

Table ES.7 and Figure ES.9 compare the average days at berth for containerships in 2020 and 2021. The larger containerships spent more time at berth in 2021 than in 2020. The time at berth for 4,000 and 8,000 TEU was not as large a change as that for at anchorage. The largest containerships did see a drastic increase for time spent at berth. For example, the 17,000 TEU containership spent an average of 13 days at berth in 2021 as compared to 6.6 days in 2020.

Table ES.6: 2021-2020 Containerships Average Days at Anchorage Comparison

Container Category	2020 Anchorage Avg Days	2021 Anchorage Avg Days	2021-2020 Change
Container - 1000	1.3	6.4	376%
Container - 2000	2.6	5.3	102%
Container - 3000	1.4	7.9	479%
Container - 4000	3.5	5.9	71%
Container - 5000	1.2	4.3	267%
Container - 6000	3.2	5.7	81%
Container - 7000	2.3	4.2	100%
Container - 8000	3.2	5.6	76%
Container - 9000	4.2	5.0	20%
Container - 10000	3.5	6.3	81%
Container - 11000	3.8	5.1	35%
Container - 12000	2.6	4.0	51%
Container - 13000	2.9	5.6	91%
Container - 14000	3.7	6.1	66%
Container - 15000	5.9	4.2	-29%
Container - 16000	2.5	7.1	188%
Container - 17000	0.0	5.2	100%
Container - 19000	0.0	1.8	100%
Container - 23000	0.0	2.4	100%

Figure ES.8: Average Days at Anchorage for Containerships by TEU size

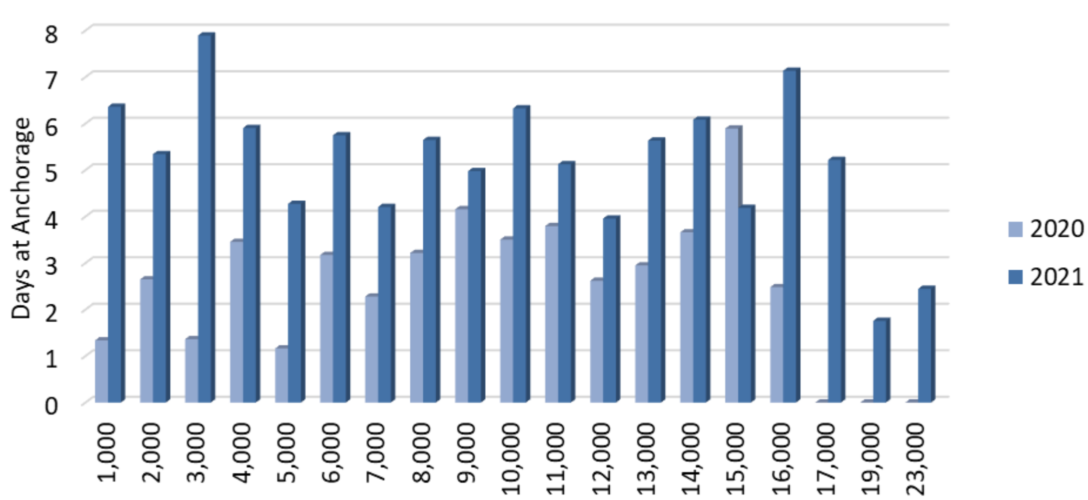
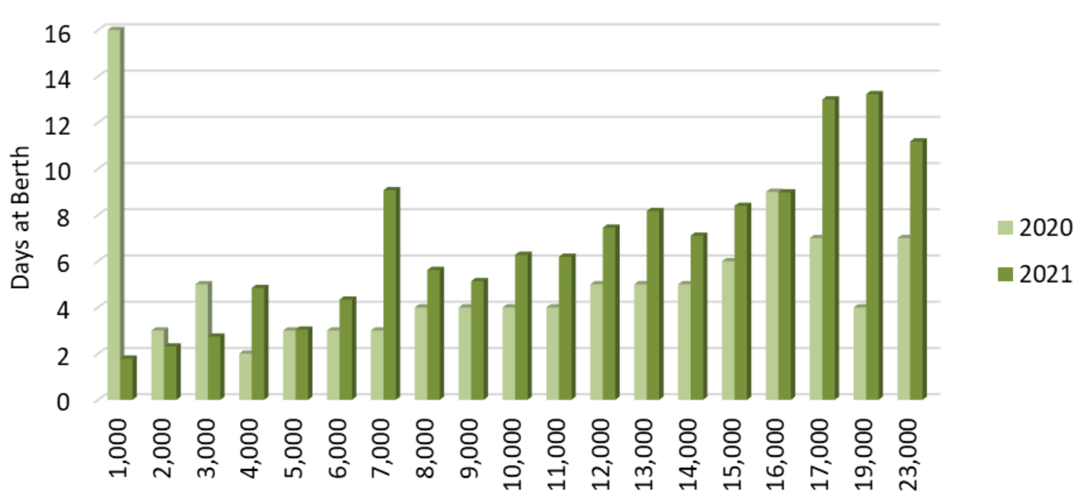


Table ES.7: 2021-2020 Containerships Average Days at Berth Comparison

Container Category	2020 Berth Time Avg Days	2021 Berth Time Avg Days	2021-2020 Change
Container - 1000	16.0	1.8	-89%
Container - 2000	3.0	2.3	-23%
Container - 3000	5.0	2.7	-45%
Container - 4000	2.0	4.8	142%
Container - 5000	3.0	3.0	1%
Container - 6000	3.0	4.3	45%
Container - 7000	3.0	9.1	202%
Container - 8000	4.0	5.6	40%
Container - 9000	4.0	5.1	28%
Container - 10000	4.0	6.3	57%
Container - 11000	4.0	6.2	55%
Container - 12000	5.0	7.4	49%
Container - 13000	5.0	8.2	63%
Container - 14000	5.0	7.1	42%
Container - 15000	6.0	8.4	40%
Container - 16000	9.0	9.0	0%
Container - 17000	7.0	13.0	86%
Container - 19000	4.0	13.2	231%
Container - 23000	7.0	11.2	60%

Figure ES.9: Average Days at Berth for Containerships by TEU size



For this inventory, an arrival is a vessel arriving to berth or anchorage from sea. A vessel moving to a berth from anchorage is considered a shift. Table ES.8 shows that the shifts more than doubled in 2021 as compared to 2020. Table ES.9 shows that the number of vessels at anchorage, including vessels that were loitering, was 60% higher in 2021. All vessel types, except for tankers, had higher anchorage visits in 2021 than in 2020. Containerships and bulk vessels had double the number of vessels at anchorage.

Table ES.8: 2021-2020 Arrivals from Sea and Shift Calls Comparison

Vessel Type	2020 Arrival	2021 Arrival	2021-2020 Change
Containership	969	924	-5%
Tanker	181	201	11%
Cruise	91	219	141%
Bulk Carrier	63	127	102%
General cargo	29	36	24%
Other	102	102	0%
Total	**1,435**	**1,609**	**12%**

Vessel Type	2020 Shift	2021 Shift	2021-2020 Change
Containership	311	1,414	355%
Tanker	326	448	37%
Cruise	33	106	221%
Bulk Carrier	50	172	244%
General cargo	37	108	192%
Other	36	47	31%
Total	**793**	**2,295**	**189%**

Table ES.9: 2021-2020 Anchorage Vessel Count Comparison

Vessel Type	2020 Anchorage	2021 Anchorage	2021-2020 Change
Containership	165	333	102%
Tanker	139	138	-1%
Cruise	9	14	56%
Bulk Carrier	42	85	102%
General cargo	20	30	50%
Other	9	14	56%
Total	**384**	**614**	**60%**

Comparison of 2021 Emissions by Source Category to 2005

It should be noted that 2005 is the baseline year and that this report compares to 2005 in order to track the CAAP progress. Following this comparison, there will also be a discussion of emission comparison to previous year. Several factors contributed to lower emissions in 2021 compared to 2005 and the major highlights by source category include:

- For OGVs, the primary reasons for emission reductions were fewer vessel calls, fuel switching, shore power, Port's Environmental Ship Index (ESI) Incentive Program, Vessel Speed Reduction (VSR) compliance, and newer vessels. In 2021, all engines for OGVs continued to use fuel with 0.1% sulfur or lower and the CARB At-Berth Regulation (i.e., shore power) was also in effect.
- For harbor craft, the emissions in 2021 were lower than 2005 emissions due to 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 increased along with increased activity.
- For CHE, 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 cleaner fleet, combined with efficiency in operations, led to lower emissions. 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, the decreases in fleet-wide emissions from line haul locomotives were due to meeting the terms of the memorandum of understanding (MOU) with CARB, and the replacement of older switching locomotives with new low-emission and ultra-low emission switchers.
- For HDV, the 2012 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. Also, 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 48% in 2021.

Table ES.10 presents the 2021 and 2005 emissions comparison by source category. Despite a 43% increase in TEU throughput in 2021 as compared to 2005, emission reductions occurred in all pollutants for each source category, except for higher CO_2e emissions for OGV, harbor craft, and CHE which resulted in an overall increase in CO_2e emissions. Please note that 2021 emissions are shown as whole numbers in this summary table. The PM and SO_x emissions are displayed with more decimal points in the source category sections.

Table ES.10: Maritime Industry-related 2021-2005 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
2021								
Ocean-going vessels	127	117	83	5,956	248	605	255	504,842
Harbor craft	15	15	15	565	1	112	29	53,521
Cargo handling equipment	6	6	5	414	2	780	86	184,837
Locomotives	27	25	27	751	1	187	42	65,216
Heavy-duty vehicles	6	6	6	1,042	4	356	52	444,814
Total	**182**	**168**	**136**	**8,729**	**255**	**2,040**	**464**	**1,253,229**
2005								
Ocean-going vessels	609	489	449	5,160	4,683	468	215	280,853
Harbor craft	33	32	33	706	4	209	49	44,996
Cargo handling equipment	54	50	53	1,573	9	822	92	134,621
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	**1,001**	**861**	**840**	**15,459**	**4,839**	**3,601**	**813**	**1,017,549**
Change between 2005 and 2021 (percent)								
Ocean-going vessels	-79%	-76%	-81%	15%	-95%	29%	19%	80%
Harbor craft	-54%	-54%	-54%	-20%	-88%	-46%	-41%	19%
Cargo handling equipment	-88%	-88%	-91%	-74%	-78%	-5%	-7%	37%
Locomotives	-52%	-53%	-52%	-56%	-99%	-21%	-53%	-21%
Heavy-duty vehicles	-98%	-98%	-98%	-83%	-91%	-81%	-86%	-6%
Total	**-82%**	**-80%**	**-84%**	**-44%**	**-95%**	**-43%**	**-43%**	**23%**

Comparison of Emissions Efficiency

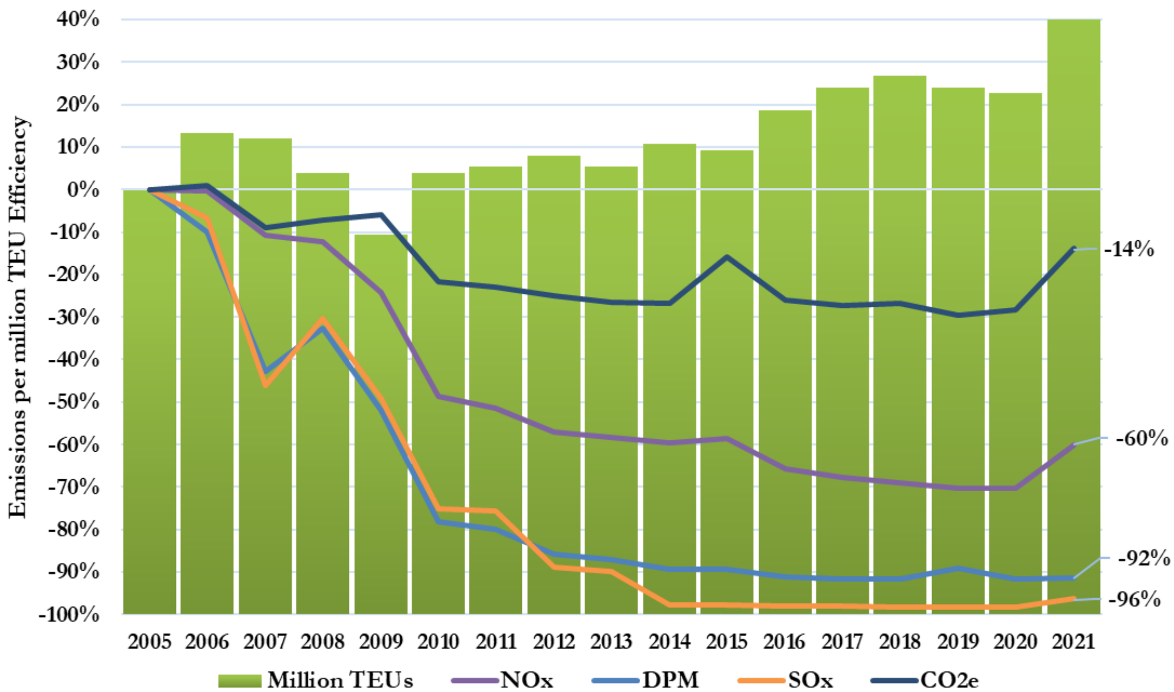
Table ES.11 summarizes the annualized emissions efficiencies for all five source categories. The overall emissions efficiency in 2021 improved for all pollutants as compared to 2005. For the comparison to previous year, the negative percentage means there were emissions inefficiencies in 2021 compared to the previous year. In Table ES.6, a positive percentage means an increase in emissions efficiency.

Table ES.11: Emissions Efficiency Metric Comparison, tons/10,000 TEUs

EI Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2021	0.170	0.157	0.128	8.17	0.24	1.91	0.43	1,173
2020	0.116	0.108	0.095	6.16	0.11	1.62	0.33	977
2005	1.337	1.150	1.122	20.65	6.46	4.81	1.09	1,360
Previous Year (2020-2021)	**-47%**	**-45%**	**-35%**	**-33%**	**-118%**	**-18%**	**-30%**	**-20%**
CAAP Progress (2005-2021)	**91%**	**91%**	**92%**	**60%**	**96%**	**60%**	**61%**	**14%**

Figure ES.10 shows the emissions efficiency trend for NO_x, DPM, SO_x, and CO_2e with million TEU bars. For the figure, a negative percentage means an increase in emissions efficiency. The figure shows that NO_x and CO_2e have increased since previous year along with the TEU throughput increase.

Figure ES.10: Emissions Efficiency Trend



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, as well as statewide and federal regulations and standards, the 2023 emission reduction standards were met for DPM and SO_x, despite the increase in activity due to the TEU cargo increase and supply chain congestion. In 2021, the 2023 NO_x emission reduction standard of 59% was not met due to the significant increase in OGV emissions. Table ES.12 summarizes DPM, NO_x, and SO_x percent reductions as compared to the 2023 emission reduction standards.

Table ES.12: Reductions as Compared to 2023 Emission Reduction Standards

Pollutant	2021 Actual Reductions	2023 Emission Reduction Standard
DPM	-84%	77%
NO_x	-44%	59%
SO_x	-95%	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.11 through ES.13 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.

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 program that occurred in a phased approach.

- CARB Harbor Craft Regulation and funding incentives led to vessel repowers which lowered emissions for harbor craft. There was also vessel attrition over the course of the past 15+ years.

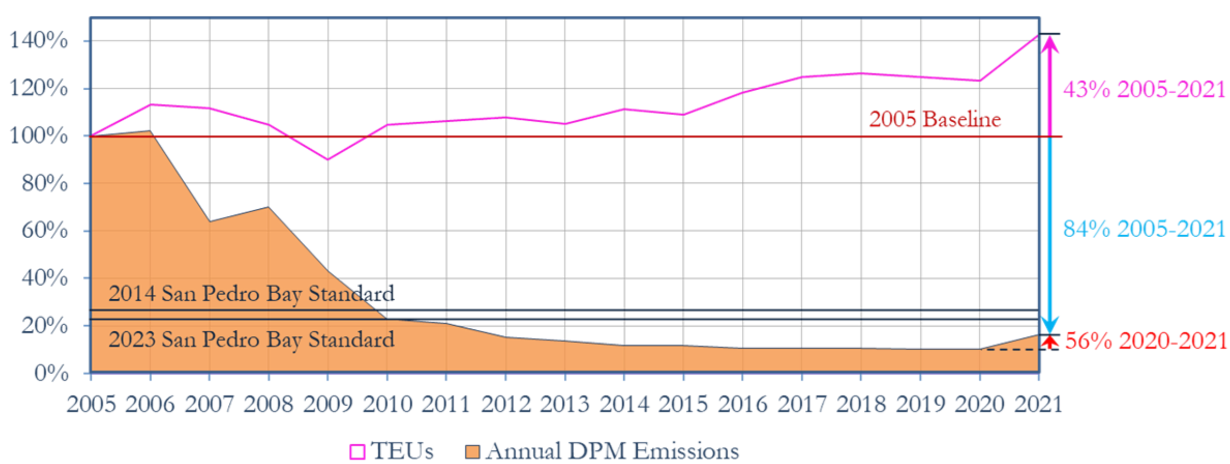
- Cleaner CHE fleet over the years due to CAAP measures and CARB's CHE Regulation which occurred mainly between 2007 and 2015. CARB's Large Spark Ignition (LSI) Regulation impacted the propane forklifts between 2007 and 2010.

- 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. Also, 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.

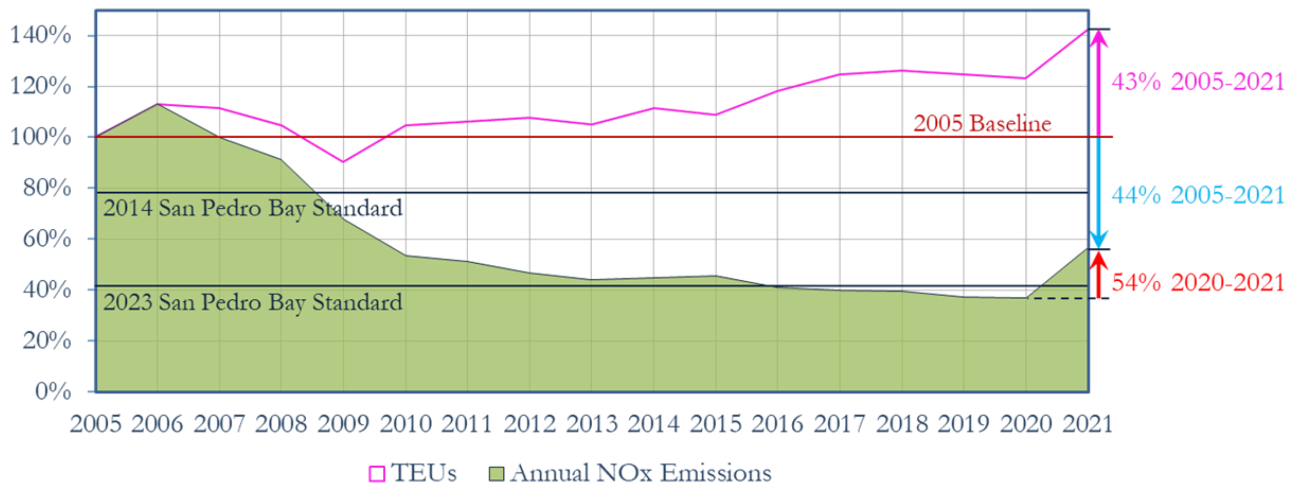
Figure ES.11 shows that the Port surpassed the 2023 DPM emission reduction standard (77%) with an 84% emission reduction in 2021. In 2021, the 0.1% sulfur fuel use requirement for OGVs from the International Maritime Organization (IMO) North American Emission Control Area (ECA) was in effect. Additionally, 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. The TEU throughput was 43% higher in 2021 as compared to 2005. In 2021, there was a 56% increase in DPM emissions as compared to 2020.

Figure ES.11: DPM Reductions to Date



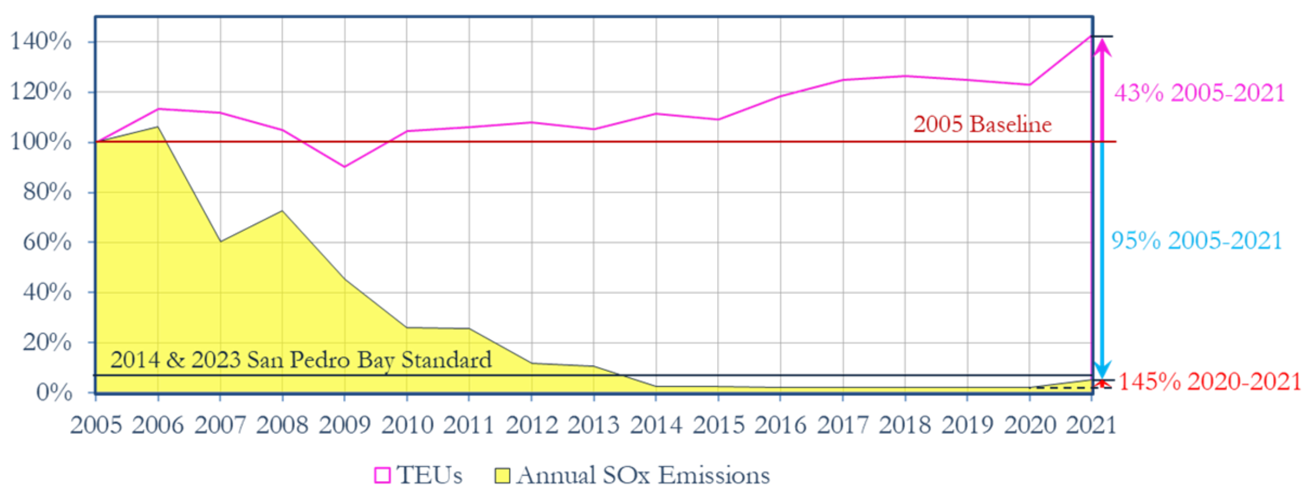
As illustrated in Figure ES.12, the Port did not meet the 2023 NO_x mass emission reduction standard (59%) in 2021 with a 44% reduction. The TEU throughput was 43% higher in 2021 as compared to 2005. In 2021, there was a 54% increase in NO_x emissions as compared to 2020.

Figure ES.12: NO_x Reductions to Date



The Port surpassed the 2023 SO_x mass emission reduction standard (93%) with a 95% reduction in 2021. In 2021, 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. The TEU throughput was 43% higher in 2020 as compared to 2005. In 2021, there was a 145% increase in SO_x emissions as compared to 2020.

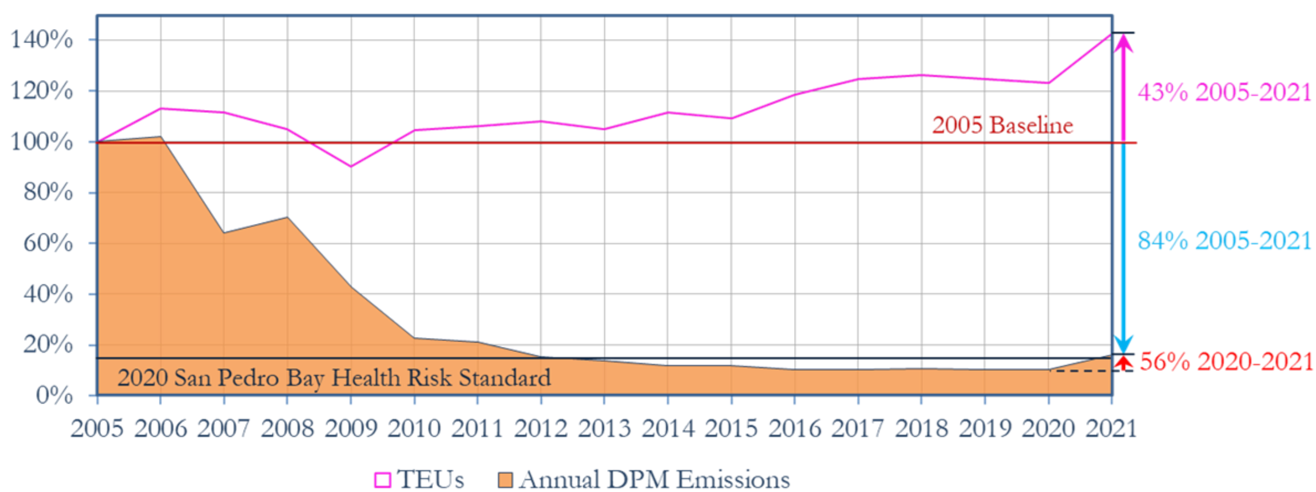
Figure ES.13: SO_x Reductions to Date



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.10 presents the progress of achieving the standard to date. In 2021, with an 84% reduction, the Port did not meet the 2020 Health Risk Reduction Standard (85%). The TEU throughput was 43% higher in 2021 as compared to 2005. In 2021, there was a 56% increase in DPM emissions as compared to 2020.

Figure ES.14: Health Risk Reduction Benefits to Date



SECTION 1 INTRODUCTION

The Port of Los Angeles (Port or POLA) 2021 Inventory of Air Emissions study presents maritime industry-related emission estimates based on 2021 activity levels. The report also includes a comparison of the estimated 2021 emissions with the 2005 baseline year and the previous year 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)

This study also includes estimates of the greenhouse gases (GHGs) carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emitted from maritime industry-related tenant operational mobile sources. To normalize the three GHG values into a single number representing CO_2 equivalents (CO_2e) the GHG emission estimates were multiplied by the following values and summed.[4]

- CO_2 – 1
- CH_4 – 25
- N_2O – 298

For presentation purposes in the report, only CO_2e values were reported because they include all three GHGs in an equivalent measure to CO_2, which makes up by far the greatest mass of GHG emissions from the source categories included in this inventory. The greenhouse gas emissions are presented in metric tons (tonnes), while the criteria pollutant emissions are shown in tons.

[4]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 commercial marine vessels, the domain lies within the harbor and up to the study area boundary comprised of an over-water area bounded in the north by the southern Ventura County line at the coast and in the south with the southern Orange County line at the coast.

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. Figure 1.1 shows the geographical extent of this inventory, and other overlapping regulatory boundaries.

Figure 1.1: Emissions Inventory Geographical Extent

Vessel emissions at anchorage have always been included in the emissions inventory report. Figure 1.2 shows the location of the anchorage areas for San Pedro Bay Ports.

Figure 1.2: Anchorage Areas

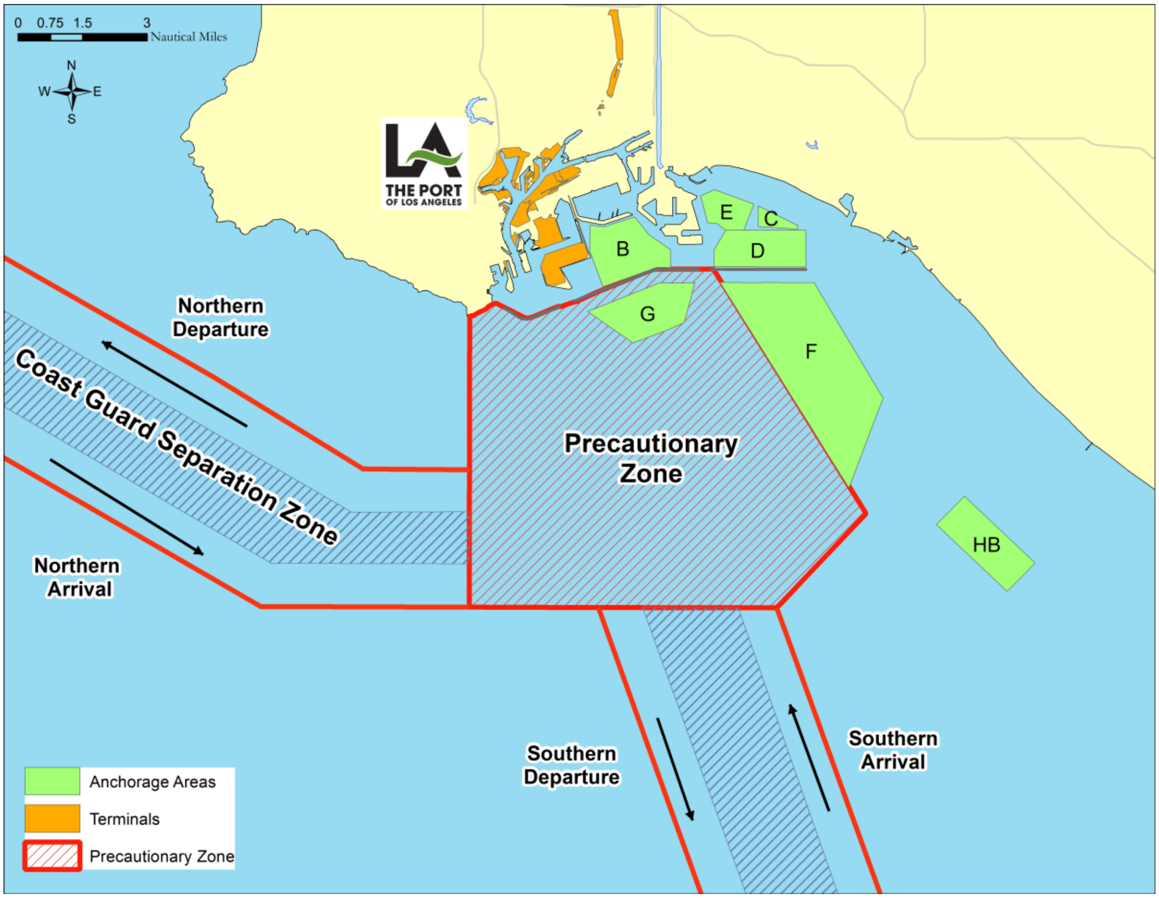
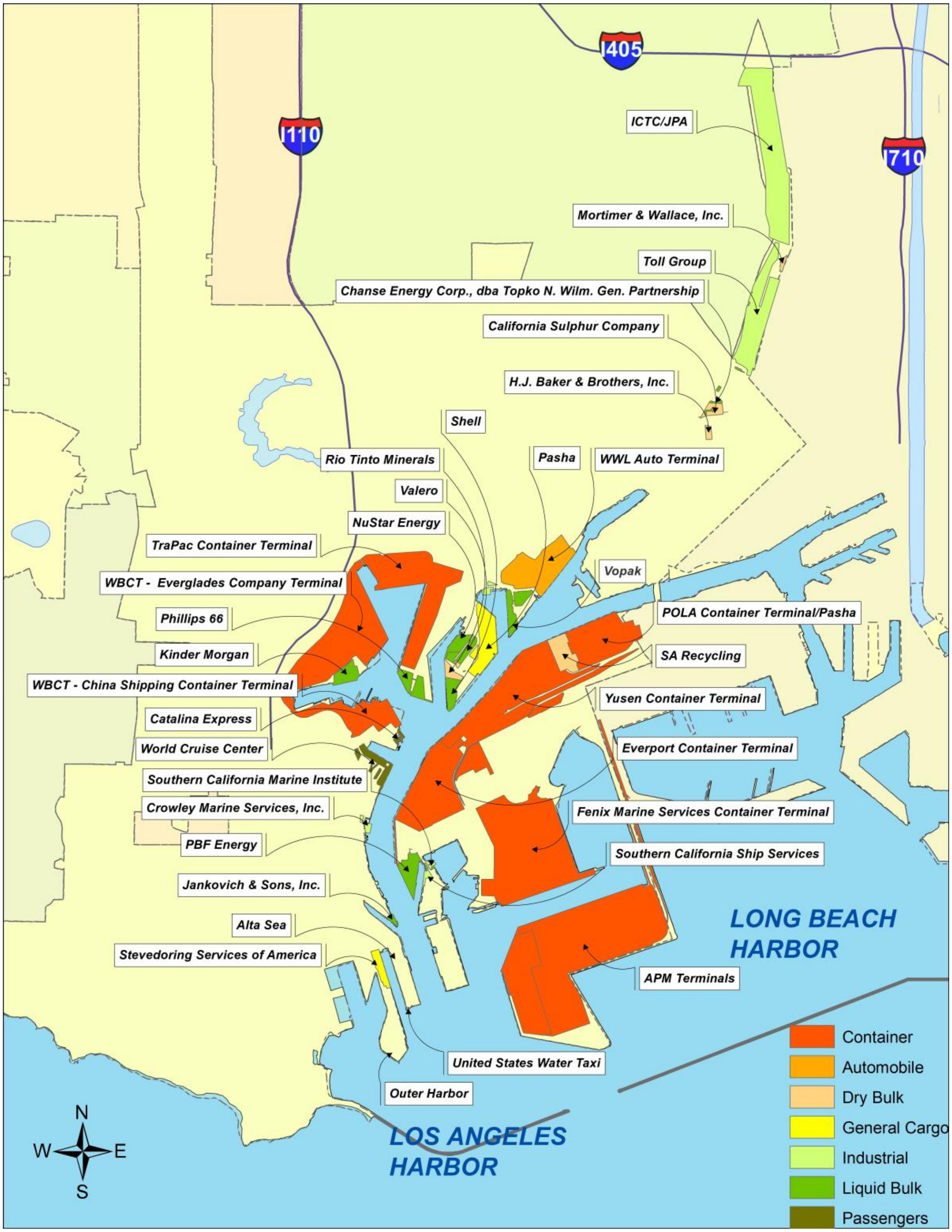


Figure 1.3 shows the land area of active Port terminals in 2021. The geographical scope for cargo handling equipment is the terminals and facilities on which they operate.

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 control 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.[5] 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 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, on March 2020, the Boards of Harbor Commissioners of the City of Los Angeles and the City of Long Beach approved a resolution to collect a Clean Truck Fund (CTF) Rate of $10 per loaded TEU moved by trucks in and out of port terminals. On November 4, 2021, the Los Angeles Board of Harbor Commissioners approved the CTF rate tariff. Zero-emission trucks are exempt from the rate throughout the duration of the program. Low NO_x trucks that are registered in the Port Drayage Truck Registry (PDTR) and 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. Currently, Port staff are working on strategies to implement the Clean Truck Fund rates and develop priorities and guidance for distributing funds to incentivize the transition to near-zero and zero-emission trucks.
- Requiring terminal operators to purchase zero-emissions equipment, if feasible, or near-zero or cleanest technology available when procuring new equipment.
- 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.

[5] *www.cleanairactionplan.org/documents/final-2017-clean-air-action-plan-update.pdf/*

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 2014, reduce emissions of NO_x by 22%, SO_x by 93%, and DPM by 72% to support attainment of the National Ambient Air Quality Standards (NAAQS) for fine particulate matter ($PM_{2.5}$) standards.
- 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 *www.imo.org/en/OurWork/Environment/Pages/Nitrogen-oxides-(NOx)-%E2%80%93-Regulation-13.aspx*	NO_x	2011 – Tier II 2016 – Tier III for ECA only	Auxiliary and propulsion engines over 130 kW output power on newly built vessels
IMO	Emissions Control Area, Low Sulfur Fuel Requirements for Marine Engines *www.imo.org/en/OurWork/Environment/Pages/Sulphur-oxides-(SOx)-%E2%80%93-Regulation-14.aspx*	DPM, PM, and SO_x	2012 ECA – 1% Sulfur 2015 ECA – 0.1% Sulfur	Significantly reduce emissions due to low sulfur content in fuel by creating Emissions Control Area (ECA)
IMO	Initial IMO Strategy on reduction of GHG emissions from ships – Resolution MEPC.304(72) *www.unfccc.int/sites/default/files/resource/250_IMO%20submission_Talanoa%20Dialogue_April%202018.pdf*	GHG	2050 – 50%	Initial IMO Strategy on reduction of GHG emissions from ships by 50% in 2050 from 2008 level. Goal is to phase out GHG
IMO	Energy Efficiency Design Index (EEDI) for International Shipping *www.imo.org/en/OurWork/Environment/Pages/Technical-and-Operational-Measures.aspx*	CO_2 and other pollutants	2013	Increases the design efficiencies of ships relating to energy and emissions

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 *www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression*	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 *www.arb.ca.gov/regact/2007/shorepwr07/shorepwr07.htm* and *www.arb.ca.gov/ports/shorepower/forms/regulatoryadvisory/regulatoryadvisory12232013.pdf*	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 *https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-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 *www.arb.ca.gov/ports/shipincin/shipincin.htm*	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 *www.cleanairactionplan.org/strategies/ships/*	All	2008	Vessel operators within 20 nm and 40 nm of Point Fermin

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

Agency	Regulation/Standard/Policy	Targeted Pollutants	Years Effective	Impact
CAAP	CAAP Measure – OGV 2 Reduction of At-Berth OGV Emissions *www.portoflosangeles.org/environment/ogv.asp*	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 *www.cleanairactionplan.org/strategies/ships/*	DPM, PM, and NO_x	2012	Vessel operators who choose to participate in ESI and/or technology demonstrations.

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 *www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression*	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 *www.arb.ca.gov/regact/carblohc/carblohc.htm*	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 *www.arb.ca.gov/regact/2010/chc10/chc10.htm*	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 *www.arb.ca.gov/our-work/programs/commercial-harbor-craft*	All	2023 to 2032	New requirements for harbor craft in a phased approach dependent on engine model year and vessel type
CAAP	CAAP Measure – HC 1 Performance Standards for Harbor Craft *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	All	Varies	Modernization of harbor craft operating at POLA upon lease renewal

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 *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines*	All	2008 through 2015	All non-road equipment
CARB	Cargo Handling Equipment Regulation *www.arb.ca.gov/regact/2011/cargo11/cargo11.htm*	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 *www.arb.ca.gov/regact/2008/lsi2008/lsi2008.htm*	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 *www.arb.ca.gov/regact/2010/offroadlsi10/lsifinalreg.pdf*	All	2009 through 2013	More stringent emissions requirements for fleets of large spark-ignition engines equipment
CAAP	CAAP Measure – CHE1 Performance Standards for CHE *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	All	2007 through 2014	Turnover to Tier 4 cargo handling equipment per lease renewal agreement
CAAP	CAAP Measure – Transition to Cleaner Equipment *www.cleanairactionplan.org/about-the-plan/*	All	2020 through 2030	Turnover to zero emissions CHE, if feasible, or near zero emissions or cleanest available if ZE/NZE not yest feasible

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 *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-locomotives*	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 *www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-nonroad-vehicles-and-engines*	SO_x and PM	2010	All locomotive engines
CARB	Low Sulfur Fuel Requirement for Intrastate Locomotives *www.arb.ca.gov/msprog/offroad/loco/loco.htm#intrastate*	SO_x, NO_x, and PM	2007	Intrastate locomotives, mainly switchers
CARB	Statewide 1998 and 2005 Memorandum of Understanding (MOUs) *www.arb.ca.gov/msprog/offroad/loco/loco.htm#intrastate*	NO_x	2010	Union Pacific and BNSF locomotives
CAAP	CAAP Measure – RL1 Pacific Harbor Line (PHL) Rail Switch Engine Modernization *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	PM	2010	Pacific Harbor Line switcher engines
CAAP	CAAP Measure – RL2 Class 1 Line-haul and Switcher Fleet Modernization *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	All	2023 – Tier 3	Class 1 locomotives at ports
CAAP	CAAP Measure – RL3 New and Redeveloped Near-Dock Rail Yards *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	All	2020 – Tier 4	New near-dock rail yards

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 *www.arb.ca.gov/msprog/onroadhd/reducstd.htm*	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 *www.arb.ca.gov/our-work/programs/obd*	NO_x and PM	2010 +	All new on-road heavy-duty vehicles
CARB	ULSD Fuel Requirement *www.arb.ca.gov/regact/ulsd2003/ulsd2003.htm*	All	2006 - ULSD	All on-road heavy-duty vehicles
CARB	Drayage Truck and Bus Regulation (amended in 2011 and 2014) *www.arb.ca.gov/msprog/onroad/porttruck/drayagevtruckbus.pdf*	All	Phase-in started in 2009	All drayage trucks operating at California ports
CARB	Low NO_x Software Upgrade Program 2007 *www.arb.ca.gov/msprog/hdsoftware/hdsoftware.htm*	NO_x	Starting 2005	1993 to 1998 on-road heavy-duty vehicles that operate in California
CARB	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation *www.arb.ca.gov/our-work/programs/ghg-std-md-hd-eng-veh*	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 *www.arb.ca.gov/cc/ab32/ab32.htm*	CO_2	GHG emissions reduction goals in 2020	All operations in California
CAAP	CAAP Measure – HDV1 Performance Standards for On-Road Heavy-Duty Vehicles; Clean Truck Program *www.portoflosangeles.org/environment/air-quality/san-pedro-bay-ports-clean-air-action-plan*	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 *www.cleanairactionplan.org/strategies/trucks/*	NO_x	2022	Rate collection for trucks; low NOx and ZE trucks exempt

SECTION 3 OCEAN-GOING VESSELS

Source Description

Based on activity data obtained from the Marine Exchange of Southern California, there was a total of 1,609 ocean-going vessels (OGVs, ships, or vessels) arrival calls to the Port in 2021. 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).

Table 3.1 presents the numbers of arrivals, departures, and shifts associated with vessels at the Port in 2021. An arrival is from sea to a berth or an anchorage (prior to shifting to a berth).

Table 3.1: 2021 Total OGV Activities

Vessel Type	Arrival	Departure	Shift	Total
Auto Carrier	82	82	6	170
Bulk	113	95	166	374
Bulk - Heavy Load	14	14	6	34
Container - 1000	13	13	56	82
Container - 2000	79	83	112	274
Container - 3000	9	10	23	42
Container - 4000	170	172	240	582
Container - 5000	88	81	160	329
Container - 6000	83	84	123	290
Container - 7000	24	25	30	79
Container - 8000	168	171	214	553
Container - 9000	58	62	82	202
Container - 10000	58	56	83	197
Container - 11000	54	58	86	198
Container - 12000	15	14	15	44
Container - 13000	47	46	88	181
Container - 14000	30	29	56	115
Container - 15000	14	13	24	51
Container - 16000	9	10	14	33
Container - 17000	3	3	3	9
Container - 19000	1	1	3	5
Container - 23000	1	1	2	4
Cruise	219	214	106	539
General Cargo	36	29	108	173
Miscellaneous	4	4	7	15
Reefer	16	16	34	66
Tanker - Chemical	131	133	286	550
Tanker - Handysize	42	40	84	166
Tanker - Panamax	27	35	75	137
Tanker - Aframax	1	1	3	5
Total	**1,609**	**1,595**	**2,295**	**5,499**

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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 the overwater boundary extends further off the coast to incorporate the South Coast AQMD modeling domain, although most of the vessel movements occur within the 40-nm arc.

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[6]
- Vessel Boarding Program (VBP) data
- Environmental Ship Index (ESI) fuel and engine data[7]
- Port Wharfinger data, including tanker load and discharge activity data
- Port and terminal shore power activity data, including usage of alternative at-berth emission control technologies (METS-1)
- Automatic Identification System (AIS) data provided by Marine Exchange of Alaska

For the 2021 EI, AIS data was obtained and analyzed to ensure that all of the vessel activity occurring within the EI geographical domain is included. The supply chain congestion that occurred in 2021 resulted in vessels spending a prolonged period of time at anchorage or within undesignated anchorage and loitering areas within the emissions inventory study area boundary. AIS data analyses showed that majority of the anchorage and loitering time is included in the SoCal MarEx data (the primary source of activity).

Loitering occurs when a vessel is no longer underway in open water, but is not at anchor, and the main engine is turned off. The decision for a vessel to loiter is at the discretion of the ship's captain and most often occurs when there are no available berths or anchorages. Anchoring mainly occur within the designated anchorage areas near the Ports or the designated contingency anchorage areas, as not to impede other vessel traffic. Due to similarities in vessel operations, time spent by vessels drifting and associated emissions are included under anchorage emissions.

The maximum speed from IHS Markit Maritime data was used and if not available, service speed (most populated speed field) was used. The alternative at-berth emission control technology used in 2021 was the Maritime Emissions Treatment System (METS).

[6] IHS, *www.ihsmarkit.com/products/maritime-world-ship-register.html*
[7] *www.sustainableworldports.org/environmental-ship-index-esi/*

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 berth hotelling emissions, the actual shore power records were used if the vessel connected to shore power. If actual VBP data or shore power data is not available, default values were used. 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, such as the 23,000 TEU containership, a suitable default was estimated by interpolating VBP data from the closest containership size class.

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	1,727	2,392	953	1,028
Container - 12000	1,740	2,124	1,285	1,275
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
Container - 17000	1,735	2,157	1,450	1,441
Container - 19000	1,950	2,275	1,350	1,475
Container - 23000	2,048	2,389	1,418	1,549
General Cargo	489	1,273	826	180
Miscellaneous	284	379	230	233
Reefer	1,416	1,231	1,067	1,427
Tanker - Chemical	498	598	1,209	415
Tanker - Handysize	659	682	1,055	560
Tanker - Panamax	480	549	882	386
Tanker - Aframax	448	565	833	417

The additional anchorage and loitering activities assessed from AIS data and not found in SoCal MarEx, used the anchorage hotelling loads while at anchor or loitering. As part of the assessment of loitering activity, several container vessels were asked about their main, auxiliary, and auxiliary boiler operations. The responses received from vessels indicted that the auxiliary engine and auxiliary boiler loads during loitering are similar to the loads that a vessel would have at anchor and when the main engine is not in use. When the vessel repositions during a loitering event, the vessel is considered to be underway, and the main engine is turned on intermittently. As mentioned earlier, analyses and comparison of AIS data and SoCal MarEx data concluded that majority of vessel drifting activity identified in AIS data is included in MarEx feed. Due to similarities in vessel operations, time spent by vessels drifting and associated emissions are included under anchorage

The cruise industry resumed passenger service in the Port of Los Angeles on September 25, 2021. Under the no-sail order, issued by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) on March 14, 2020, cruise ship operators were required to suspend passenger operations. Beginning late in the fourth quarter of 2020 and through the first quarter of 2021, as part of the CDC's Conditional Sailing Order framework, cruise operators prepared for the return to passenger operations. 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 2021. These auxiliary engine defaults values were produced by calculating the call-weighted average of VBP data by mode of operation for each cruise vessel size group. Auxiliary engine kW loads for cruise ship activity in the Port area prior to September 25, 2021, were reduced by 27% due to the reduced demand for hotel services for vessels not carrying passengers. This reduction was determined by conducting a comparison of the pre-COVID-19 POLA at berth shore power kW values with the values during the COVID-19 period. This comparison showed an average 27% reduction in kW energy use. Typically, hotel activities remain relatively constant across all modes (transit, maneuvering, berth, and anchor), therefore, this reduction was applied directly to all modes for cruise ships operating during this time frame.

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

Passenger Range	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
<1,500	3,994	5,268	3,069	2,289
1,500 < 2,000	7,000	9,000	5,613	na
2,000 < 2,500	11,000	11,350	6,900	na
2,500 < 3,000	9,781	8,309	6,089	5,916
3,000 < 3,500	8,292	10,369	8,292	7,475
3,500 < 4,000	9,945	11,411	10,445	10,191
4,000 < 4,500	12,500	14,000	12,000	9,900
4,500 < 5,000	13,000	14,500	13,000	na

Table 3.4 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 boiler load listed in the table was used as a default for the tanker calls that were discharging cargo.

Table 3.4: 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	193	317	448	448
Container - 12000	127	272	455	455
Container - 13000	241	306	559	558
Container - 14000	266	481	402	532
Container - 15000	259	395	402	402
Container - 16000	206	290	470	470
Container - 17000	152	184	537	537
Container - 19000	355	581	783	783
Container - 23000	373	610	822	822
General Cargo	77	177	227	227
Miscellaneous	54	85	144	144
Reefer	89	171	234	234
Tanker - Chemical	90	135	316	203
Tanker - Handysize	143	285	3,064	321
Tanker - Panamax	223	346	3,803	517
Tanker - Aframax	179	144	6,226	507

Table 3.5 presents the load defaults for the auxiliary boilers for diesel electric cruise ships. The default averages presented are an operational average, meaning they factor in if a vessel reported that they do not use their auxiliary boiler in a certain mode.

Table 3.5: Cruise Ship Auxiliary Boiler Load Defaults by Mode, kW

Passenger Range	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
<1,500	992	784	867	766
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	596	602	895	431
3,000 < 3,500	697	1,199	1,984	1,068
3,500 < 4,000	401	347	989	868
4,000 < 4,500	0	0	503	503
4,500 < 5,000	0	0	503	503
Non- diesel electric	282	361	612	306

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 or anchorage for each visit. In 2021, containerships spent more time at berth than in the previous year with the larger containerships spending an average 7 to 11 days at berth.

Table 3.6: 2021 Hotelling Times at Berth, hours

Vessel Type	Min Hours	Max Hours	Avg Hours	Avg Days
Auto Carrier	6.6	69.4	16.8	0.7
Bulk	11.3	504.3	85.5	3.6
Bulk - Heavy Load	3.3	169.8	20.5	0.9
Container - 1000	20.5	68.4	42.8	1.8
Container - 2000	1.2	361.4	55.4	2.3
Container - 3000	9.1	158.5	65.7	2.7
Container - 4000	11.7	374.5	116.2	4.8
Container - 5000	10.7	266.7	73.0	3.0
Container - 6000	13.0	250.5	104.1	4.3
Container - 7000	15.6	3,280.2	217.7	9.1
Container - 8000	14.6	657.7	134.8	5.6
Container - 9000	20.4	280.9	123.2	5.1
Container - 10000	12.0	354.9	150.6	6.3
Container - 11000	26.3	428.2	148.6	6.2
Container - 12000	13.5	429.9	178.8	7.4
Container - 13000	48.5	301.1	196.1	8.2
Container - 14000	20.9	264.0	170.4	7.1
Container - 15000	22.3	343.9	201.4	8.4
Container - 16000	26.9	278.9	215.4	9.0
Container - 17000	249.8	359.7	312.0	13.0
Container - 19000	317.5	317.5	317.5	13.2
Container - 23000	268.3	268.3	268.3	11.2
Cruise	7.2	1,711.1	48.2	2.0
General Cargo	8.8	353.7	63.5	2.6
Miscellaneous	2.2	446.8	152.0	6.3
Reefer	7.5	100.2	33.4	1.4
Tanker - Chemical	10.8	199.9	32.0	1.3
Tanker - Handysize	16.7	110.5	42.3	1.8
Tanker - Panamax	15.4	123.0	49.0	2.0
Tanker - Aframax	25.7	25.7	25.7	1.1

DB ID705

Table 3.7 summarizes the hotelling times in hours at anchorage. In 2021, more containerships were at anchorage, for periods longer than in previous years, with an average of 4 to 9.5 days at berth.

Table 3.7: 2021 Hotelling Times at Anchorage, hours

Vessel Type	Min Hours	Max Hours	Avg Hours	Avg Days	Vessel Count
Auto Carrier	15.8	210.7	58.4	2.4	4
Bulk	1.5	931.8	145.2	6.1	83
Bulk - Heavy Load	10.4	619.4	192.1	8.0	2
Container - 1000	1.7	656.8	152.7	6.4	11
Container - 2000	2.8	503.6	128.2	5.3	28
Container - 3000	10.6	1,029.4	189.4	7.9	8
Container - 4000	0.8	985.0	141.7	5.9	52
Container - 5000	0.5	523.8	102.5	4.3	28
Container - 6000	0.2	523.3	138.0	5.7	26
Container - 7000	4.2	291.2	100.9	4.2	5
Container - 8000	0.8	442.8	135.5	5.6	53
Container - 9000	2.5	562.7	119.5	5.0	22
Container - 10000	0.1	551.2	151.9	6.3	24
Container - 11000	3.5	372.5	123.0	5.1	21
Container - 12000	4.7	348.8	94.9	4.0	5
Container - 13000	2.2	403.3	135.2	5.6	21
Container - 14000	1.8	374.7	146.0	6.1	13
Container - 15000	0.3	298.5	100.5	4.2	9
Container - 16000	12.9	350.3	171.2	7.1	4
Container - 17000	18.2	228.8	125.2	5.2	1
Container - 19000	24.4	52.0	42.1	1.8	1
Container - 23000	54.9	62.4	58.7	2.4	1
Cruise	1.5	432.3	80.8	3.4	14
General Cargo	4.9	1,111.1	164.4	6.9	30
Miscellaneous	11.21	77.92	44.56	1.9	1
Reefer	2.4	103.1	32.9	1.4	9
Tanker - Chemical	0.6	501.0	45.3	1.9	99
Tanker - Handysize	0.3	723.8	99.5	4.1	12
Tanker - Panamax	5.6	422.3	66.8	2.8	26
Tanker - Aframax	11.1	58.5	34.5	1.4	1
Total					**614**

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 2021 were frequent callers with six or more calls.

Table 3.8: 2021 Percentage of Frequent Callers

Vessel Type	Frequent Vessels	Total Vessels	Percent Frequent Vessels
Auto Carrier	2	53	4%
Bulk	0	105	0%
Bulk - Heavy Load	1	4	25%
Container - 1000	0	11	0%
Container - 2000	5	34	15%
Container - 3000	0	9	0%
Container - 4000	7	57	12%
Container - 5000	7	34	21%
Container - 6000	4	29	14%
Container - 7000	2	6	33%
Container - 8000	4	58	7%
Container - 9000	2	25	8%
Container - 10000	0	25	0%
Container - 11000	1	24	4%
Container - 12000	0	8	0%
Container - 13000	0	21	0%
Container - 14000	1	13	8%
Container - 15000	0	9	0%
Container - 16000	0	4	0%
Container - 17000	0	2	0%
Container - 19000	0	1	0%
Container - 23000	0	1	0%
Cruise	14	22	64%
General Cargo	0	36	0%
Miscellaneous	0	1	0%
Reefer	0	12	0%
Tanker - Chemical	2	110	2%
Tanker - Handysize	3	13	23%
Tanker - Panamax	0	32	0%
Tanker - Aframax	0	1	0%
Total	**55**	**760**	
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, deadweight, maximum rated speed, and main and auxiliary installed engine power ratings for the specific vessels that called the Port in 2021.

Table 3.9: 2021 Vessel Type Characteristics

Vessel Type	Average Year Built	Age (Years)	DWT (tonnes)	Max Speed (knots)	Main Eng (kW)	Aux Eng (kW)
Auto Carrier	2007	14	21,376	20.0	14,009	3,193
Bulk	2013	8	48,423	14.7	7,613	2,103
Bulk - Heavy Load	2005	17	15,892	14.4	6,493	1,617
Container - 1000	2012	9	22,809	20.0	14,270	5,037
Container - 2000	2007	14	34,376	21.7	20,878	6,391
Container - 3000	2008	13	46,300	22.3	29,506	6,333
Container - 4000	2008	13	57,707	24.0	41,485	7,318
Container - 5000	2008	13	65,894	23.6	43,490	8,512
Container - 6000	2007	14	79,178	25.2	61,723	11,279
Container - 7000	2005	16	86,183	24.6	61,896	11,098
Container - 8000	2010	11	101,319	24.8	63,307	13,398
Container - 9000	2011	10	107,705	23.7	56,989	14,697
Container - 10000	2014	7	121,466	23.7	54,290	12,967
Container - 11000	2014	7	130,967	23.9	58,850	14,074
Container - 12000	2018	3	133,239	22.7	50,017	13,971
Container - 13000	2011	10	150,327	24.2	69,619	14,347
Container - 14000	2014	7	155,910	23.2	58,288	14,987
Container - 15000	2020	1	157,299	22.2	47,106	14,095
Container - 16000	2014	8	186,804	23.8	71,400	18,000
Container - 17000	2010	11	153,597	23.3	71,466	20,740
Container - 19000	2015	6	199,273	19.0	62,499	17,000
Container - 23000	2015	6	224,999	18.5	75,569	19,500
Cruise	2006	15	7,954	20.3	54,192	5,195
General Cargo	2006	15	42,057	15.3	9,590	2,334
Miscellaneous	1967	54	419	12.5	1,285	600
Reefer	1996	25	12,219	21.3	12,656	4,497
Tanker - Chemical	2013	8	47,189	14.7	8,371	2,892
Tanker - Handysize	2005	16	40,908	14.6	7,798	2,220
Tanker - Panamax	2009	12	70,864	14.9	11,333	2,836
Tanker - Aframax	2005	16	107,081	14.8	13,530	na

DB ID695

Table 3.10 presents the percent of engine tier by vessel type for arrivals/shifts at the Port. In 2021, 26 vessels had certified Tier III main engines: one (1) auto carrier, fourteen (14) containerships, three (3) general cargo, and eight (8) tankers. 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 steamships that called the Port in 2021.

Table 3.10: 2021 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	13%	84%	1%	1%	0%	83
Bulk	0%	42%	59%	0%	0%	106
Bulk - Heavy Load	6%	31%	63%	0%	0%	16
Container - 1000	0%	62%	39%	0%	0%	13
Container - 2000	2%	82%	13%	0%	2%	85
Container - 3000	0%	82%	18%	0%	0%	11
Container - 4000	1%	90%	10%	0%	0%	172
Container - 5000	1%	81%	18%	0%	0%	91
Container - 6000	0%	81%	19%	0%	0%	84
Container - 7000	0%	100%	0%	0%	0%	25
Container - 8000	0%	51%	49%	0%	0%	169
Container - 9000	0%	44%	56%	0%	0%	61
Container - 10000	0%	17%	83%	0%	0%	60
Container - 11000	0%	52%	38%	10%	0%	58
Container - 12000	0%	6%	56%	38%	0%	16
Container - 13000	0%	40%	60%	0%	0%	50
Container - 14000	0%	29%	61%	10%	0%	31
Container - 15000	0%	0%	0%	100%	0%	17
Container - 16000	0%	0%	100%	0%	0%	9
Container - 17000	0%	33%	67%	0%	0%	3
Container - 19000	0%	0%	100%	0%	0%	1
Container - 23000	0%	0%	100%	0%	0%	1
Cruise	19%	62%	18%	0%	1%	218
General Cargo	29%	60%	3%	9%	0%	35
Miscellaneous	100%	0%	0%	0%	0%	4
Reefer	94%	6%	0%	0%	0%	16
Tanker - Chemical	0%	47%	48%	5%	0%	161
Tanker - Handysize	33%	67%	0%	0%	0%	42
Tanker - Panamax	0%	72%	28%	0%	0%	36
Tanker - Aframax	0%	100%	0%	0%	0%	1
Total	**6%**	**60%**	**32%**	**3%**	**0%**	**1,675**

DB ID1789

Emissions Estimation Methodology

The methodology to estimate 2020 emissions from OGVs activity is described in Section 2 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3. The following improvements for methodology and activity were made in estimating 2021 OGV emissions:

- Updated emission factors for steam powered main engines to be consistent with CARB and EPA's latest methodology.
- Updated auxiliary engine and auxiliary boiler default loads with VBP data collected since the completion of the 2020 EI.
- Additional distance and associated emissions occurring outside the 40 nautical mile zone and within the EI boundary are included from vessels transiting to/from Hawaiian ports using the alternative Hawaiian route instead of traditional western route.

The updated emission factors are per EPA's Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (April 2022)[8]. 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, 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, 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

[8] *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

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 (tpy), while the greenhouse gas emissions are in tonnes per year. This report includes the anchorage and loitering emissions that occurred within the geographical domain in 2021. Anchoring mainly occur within the designated anchorage areas near the Ports or the designated contingency anchorage areas, as not to impede other vessel traffic. Loitering occurs when a vessel is no longer underway in open water, but is not at anchor, and the main engine is turned off. The decision for a vessel to loiter is at the discretion of the ship's captain and most often occurs when there are no available berths or anchorages.

Table 3.14 presents summaries of emission estimates by engine type in tons per year. The emissions for the CARB-certified capture and control systems, which are used to treat emissions from auxiliary engines, were included in the auxiliary engine emissions in this table. The additional loitering and anchorage emissions assessed from AIS data, but not accounted for in the SoCal MarEx data feed traditionally provided for this study are included as a separate row of emissions.

Table 3.14: 2021 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	13	12	13	1,328	20	118	74	42,306
Auxiliary Engine	70	64	70	4,114	129	436	156	249,646
Auxiliary Boiler	44	40	0	462	96	47	23	209,069
Additional loitering/anchorage	1	1	1	53	2	5	2	3,821
Total	**127**	**117**	**83**	**5,956**	**248**	**605**	**255**	**504,842**

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A summary of the OGV emission estimates by vessel type for all pollutants for the year 2021 is presented in Table 3.15.

Table 3.15: 2021 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	0.7	0.7	0.6	53	0.9	5.3	2.4	2,861
Bulk	4.1	3.8	2.8	195	9.6	18.9	6.8	15,906
Bulk - Heavy Load	0.1	0.1	0.1	7	0.3	0.6	0.3	464
Container - 1000	2.4	2.2	1.9	116	5.6	12.1	4.5	8,805
Container - 2000	4.3	4.0	2.6	189	9.3	19.2	7.9	17,225
Container - 3000	1.0	1.0	0.6	44	2.0	4.3	1.6	4,400
Container - 4000	17.5	16.1	12.4	886	36.3	92.2	37.1	69,134
Container - 5000	8.2	7.5	5.3	372	18.0	42.0	18.5	31,702
Container - 6000	8.5	7.8	5.2	420	12.1	40.6	18.4	35,321
Container - 7000	1.9	1.8	1.1	95	3.6	8.9	4.3	7,852
Container - 8000	13.9	12.8	7.5	640	17.9	62.8	30.0	61,614
Container - 9000	5.4	5.0	2.8	225	11.2	22.1	10.0	23,236
Container - 10000	5.9	5.4	3.3	254	5.9	25.2	11.1	26,731
Container - 11000	4.8	4.5	3.4	230	7.9	26.0	12.1	18,946
Container - 12000	0.9	0.8	0.5	33	1.0	4.2	2.0	3,974
Container - 13000	6.6	6.1	4.2	273	13.0	31.2	14.4	25,441
Container - 14000	3.6	3.3	2.2	136	6.8	16.7	7.5	14,398
Container - 15000	1.5	1.3	1.0	31	2.9	7.1	3.1	5,657
Container - 16000	1.8	1.6	1.3	69	4.0	9.2	4.1	6,167
Container - 17000	0.4	0.4	0.3	17	1.0	2.2	1.0	1,521
Container - 19000	0.1	0.1	0.1	4	0.4	0.3	0.2	542
Container - 23000	0.1	0.1	0.1	5	0.2	0.4	0.2	524
Cruise	18.4	16.9	15.9	1,066	42.8	95.6	35.9	64,648
General Cargo	2.4	2.2	1.3	90	5.9	9.2	3.6	9,079
Miscellaneous	0.1	0.1	0.1	5	0.3	0.4	0.2	425
Reefer	0.6	0.6	0.5	40	1.4	3.4	1.4	2,145
Tanker - Chemical	4.0	3.7	3.1	198	8.6	20.9	7.2	15,288
Tanker - Handysize	3.4	3.2	1.5	123	8.8	11.2	4.3	13,618
Tanker - Panamax	3.1	2.9	0.9	84	7.9	8.0	3.1	13,113
Tanker - Aframax	0.1	0.1	0.0	2	0.2	0.2	0.1	283
Total	**125.9**	**115.8**	**82.3**	**5,904**	**245.7**	**600.2**	**253.2**	**501,021**
Additional loitering/anchorage	1.0	0.9	0.8	52.6	2.4	4.7	1.8	3,821
Total	**126.9**	**116.8**	**83.1**	**5,956.3**	**248.0**	**605.0**	**254.9**	**504,842**

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Table 3.16 presents summaries of emission estimates by the various modes in tons per year. 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 3.16: 2021 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	10.5	9.7	10.5	1,159	18.1	97.1	56.0	37,648
Transit	Auxiliary Engine	6.2	5.7	6.2	378	11.9	37.3	13.6	21,653
Transit	Auxiliary Boiler	0.6	0.6	0.0	7	1.4	0.7	0.3	2,962
Total Transit		**17.3**	**16.0**	**16.7**	**1,544**	**31.4**	**135.1**	**69.9**	**62,263**
Maneuvering	Main	2.0	1.9	2.0	169	2.2	20.4	17.7	4,658
Maneuvering	Auxiliary Engine	2.0	1.8	2.0	118	3.6	11.8	4.3	6,872
Maneuvering	Auxiliary Boiler	0.3	0.3	0.0	3	0.6	0.3	0.1	1,324
Total Maneuvering		**4.3**	**3.9**	**4.0**	**290**	**6.5**	**32.6**	**22.2**	**12,854**
Hotelling at-berth	Main	0.0	0.0	0.0	0	0.0	0.0	0.0	0
Hotelling at-berth	Auxiliary Engine	17.1	15.7	17.1	998	35.7	114.3	39.0	62,783
Hotelling at-berth	Auxiliary Boiler	21.2	19.5	0.0	224.3	46.9	22.7	11.4	101,473
Total Hotelling at-berth		**38.3**	**35.2**	**17.1**	**1,222**	**82.6**	**137.0**	**50.4**	**164,256**
Hotelling at-anchorage	Main	0.0	0.0	0.0	0	0.0	0.0	0.0	0
Hotelling at-anchorage	Auxiliary Engine	44.6	41.0	44.6	2,619	78.2	272.5	99.1	158,338
Hotelling at-anchorage	Auxiliary Boiler	21.5	19.8	0.0	228	47.0	23.1	11.6	103,310
Total Hotelling at-anchorage		**66.0**	**60.8**	**44.6**	**2,848**	**125.1**	**295.6**	**110.7**	**261,649**
Additional loitering/anchorage		1.0	0.9	0.8	53	2.4	4.7	1.8	3,821
Total		**126.9**	**116.8**	**83.1**	**5,956.3**	**247.9**	**605.1**	**254.9**	**504,842**

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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.

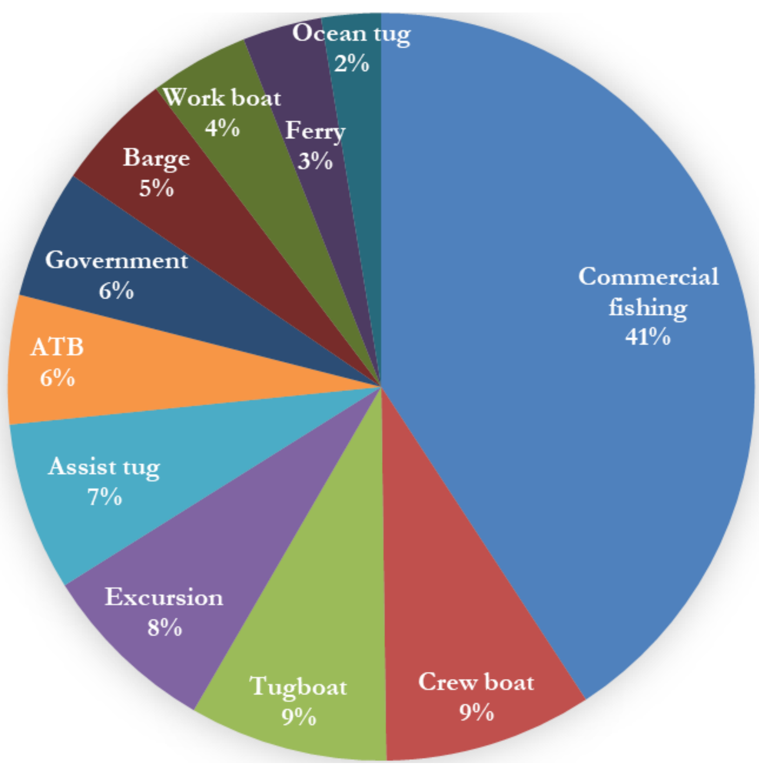
Source Description

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). In 2021, ATBs were added to the harbor craft inventory to be consistent with 2022 CARB CHC regulation amendment. The harbor craft emissions inventory consists of the following vessel types:

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

Figure 4.1 presents the distribution of the 221 commercial harbor craft inventoried for the Port in 2021.

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.

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 2021
- Vessel repower information

Operational Profiles

Tables 4.1 and 4.2 summarize the main and auxiliary engine data, respectively, for each vessel type. The averages by vessel type were used as defaults for vessels for which the model year, horsepower, or operating hour information was missing. Defaults were used mainly for commercial fishing vessels and resulted in the use of defaults for 10% of engine model year values, 8% of horsepower values, and 10% of operating hours.

There are a number of companies that operate harbor craft in both the ports of Los Angeles and Long Beach harbors. The activity hours for the vessels that are common to both ports reflect work performed during 2021 for the Port of Los Angeles harbor only.

Table 4.1: 2021 Summary of Propulsion 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	17	34	1999	2019	2012	2,000	3,433	2,675	362	1,807	1,180
ATB	13	26	2001	2018	2009	2,035	6,000	4,449	0	359	92
Commercial fishing	95	105	1957	2018	2003	150	1,000	378	0	5,000	1,507
Crew boat	21	51	2003	2021	2012	180	1,450	575	124	1,984	993
Excursion	18	36	2006	2021	2014	250	630	405	0	2,800	1,262
Ferry	8	20	2008	2015	2011	2,250	2,680	2,298	433	1,518	992
Government	13	25	1993	2019	2008	240	1,770	608	34	1,076	329
Ocean tug	6	12	2003	2007	2006	1,800	2,375	1,954	200	1,500	840
Tugboat	20	39	2001	2018	2011	235	3,386	1,154	35	1,067	507
Work boat	10	22	2008	2021	2014	210	1,000	575	0	2,012	955
Total	**221**	**370**									

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Table 4.2: 2021 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	17	37	2010	2019	2015	54	369	206	124	2,420	1,351
ATB	13	32	2001	2018	2011	102	800	358	0	2,132	402
ATB's Barge	na	51	2001	2008	2003	95	1900	644	0	319	101
Commercial fishing	95	46	1957	2016	2009	12	185	78	0	5,000	2,024
Crew boat	21	24	2004	2021	2013	11	180	62	5	2,700	941
Excursion	18	20	1981	2020	2011	11	54	38	0	4,000	2,060
Ferry	8	16	2008	2017	2012	18	120	69	435	3,297	945
Government	13	18	2002	2019	2006	25	1555	463	0	1713	234
Ocean tug	6	12	2003	2007	2006	60	150	90	200	750	540
Tugboat	20	35	2004	2018	2011	15	429	139	0	2,477	626
Work boat	10	15	1979	2021	2010	40	133	82	0	3,372	1,011
Total	**221**	**306**									

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Harbor craft engines with known model year and horsepower (hp) were categorized according to their respective EPA marine engine standards (known as "tier level"). To be consistent with CARB CHC regulation amendment, the table has been updated.

Table 4.3: Harbor Craft Marine Engine Tier Levels

EPA Tier Level	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 2021. If model year and/or horsepower information were not available, the engines were classified as unknown. Due to rounding, the percent in the figure does not add up to 100%.

Figure 4.2: Distribution of Harbor Craft Engines by Engine Standards

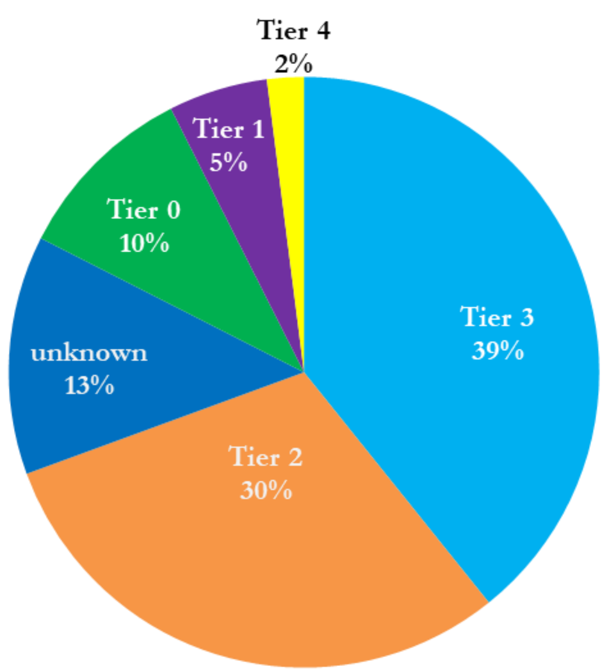


Table 4.4 summarizes the energy consumption (kWh) per engine tier used to estimate 2021 harbor craft emissions. The newer Tier 2 to Tier 4 engines made up 82% of the harbor craft energy consumption, indicating higher use of cleaner engines. Energy consumption of harbor craft engines with unknown tier was distributed among other tiers based on defaults used for missing model year or horsepower for emissions calculations. In 2021, there were more Tier 0 harbor craft due to the addition of ATBs and barge engines to the inventory.

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

Engine Tier	2021 kWh	2021 % of Total
Tier 0	8,908,712	12%
Tier 1	4,504,172	6%
Tier 2	31,076,396	42%
Tier 3	25,852,121	35%
Tier 4	4,524,378	6%
Total	**74,865,778**	**100%**

Emissions Estimation Methodology

The emissions calculation methodology and the emission rates are described in Section 3 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3. The Port's harbor craft emission calculation methodology is consistent with the methodology used by CARB to estimate emissions inventory for commercial harbor craft operating in California.[9] CARB updated the emission factors, useful life, and load factors during development of 2022 CARB CHC regulation amendment updates. The previous year emissions included in Section 9 of this report were re-estimated using the latest methodology. Harbor craft emissions were estimated for each engine individually, based on the engine's model year, power rating, and annual hours of operation

Emission Estimates

Table 4.5 summarizes the estimated 2021 harbor craft emissions by vessel type and engine type. 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 table. This is because there are fewer decimal places displayed (for readability) than were included in the calculated total. The criteria pollutants are listed as tons per year while the CO_2e values are listed as tonnes (metric tons) per year.

[9] 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*

Table 4.5: 2021 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	0.3	0.3	0.3	12.2	0.0	3.2	0.5	1,861
	Propulsion	1.8	1.7	1.8	78.1	0.1	16.8	3.7	9,079
Assist Tug Total		**2.1**	**2.0**	**2.1**	**90.3**	**0.1**	**20.0**	**4.1**	**10,940**
ATB	Auxiliary	0.2	0.2	0.2	6.4	0.0	1.6	0.3	874
	Propulsion	1.5	1.4	1.5	37.8	0.0	5.9	3.0	2,941
ATB Total		**1.7**	**1.6**	**1.7**	**44.3**	**0.0**	**7.6**	**3.2**	**3,815**
Barge - ATB	Auxiliary	0.2	0.2	0.2	7.1	0.0	1.1	0.2	489
	Propulsion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Barge Total		**0.2**	**0.2**	**0.2**	**7.1**	**0.0**	**1.1**	**0.2**	**489**
Commercial Fishing	Auxiliary	0.4	0.4	0.4	12.3	0.0	3.6	0.6	1,773
	Propulsion	4.1	3.9	4.1	118.7	0.1	30.9	7.6	9,101
Commercial Fishing Total		**4.5**	**4.3**	**4.5**	**131.0**	**0.1**	**34.5**	**8.2**	**10,874**
Crew boat	Auxiliary	0.1	0.1	0.1	2.6	0.0	0.7	0.1	355
	Propulsion	0.9	0.9	0.9	45.0	0.0	7.6	1.7	4,349
Crew boat Total		**1.0**	**0.9**	**1.0**	**47.6**	**0.0**	**8.2**	**1.9**	**4,704**
Excursion	Auxiliary	0.1	0.1	0.1	3.2	0.0	0.9	0.2	438
	Propulsion	0.4	0.4	0.4	23.2	0.0	3.9	0.9	2,538
Excursion Total		**0.6**	**0.5**	**0.6**	**26.4**	**0.0**	**4.8**	**1.0**	**2,976**
Ferry	Auxiliary	0.1	0.1	0.1	2.0	0.0	0.5	0.1	286
	Propulsion	1.6	1.5	1.6	79.5	0.1	13.9	3.3	7,566
Ferry Total		**1.7**	**1.6**	**1.7**	**81.4**	**0.1**	**14.4**	**3.4**	**7,852**
Government	Auxiliary	0.1	0.1	0.1	1.5	0.0	0.2	0.1	118
	Propulsion	0.3	0.2	0.3	9.0	0.0	1.4	0.5	842
Government Total		**0.3**	**0.3**	**0.3**	**10.5**	**0.0**	**1.7**	**0.6**	**961**
Ocean Tug	Auxiliary	0.1	0.1	0.1	1.5	0.0	0.3	0.1	167
	Propulsion	2.3	2.2	2.3	79.1	0.0	10.9	4.3	5,253
Ocean Tug Total		**2.4**	**2.2**	**2.4**	**80.6**	**0.1**	**11.2**	**4.3**	**5,421**
Tugboat	Auxiliary	0.2	0.1	0.2	4.7	0.0	1.3	0.2	680
	Propulsion	0.5	0.4	0.5	22.9	0.0	3.9	0.9	2,140
Tugboat Total		**0.6**	**0.6**	**0.6**	**27.6**	**0.0**	**5.1**	**1.1**	**2,819**
Work boat	Auxiliary	0.0	0.0	0.0	1.6	0.0	0.4	0.1	234
	Propulsion	0.3	0.3	0.3	17.2	0.0	3.2	0.6	2,436
Work boat Total		**0.4**	**0.3**	**0.4**	**18.8**	**0.0**	**3.6**	**0.7**	**2,669**
Harbor Craft Total		**15.4**	**14.6**	**15.4**	**565.5**	**0.5**	**112.4**	**28.8**	**53,521**

DB ID427

SECTION 5 CARGO HANDLING EQUIPMENT

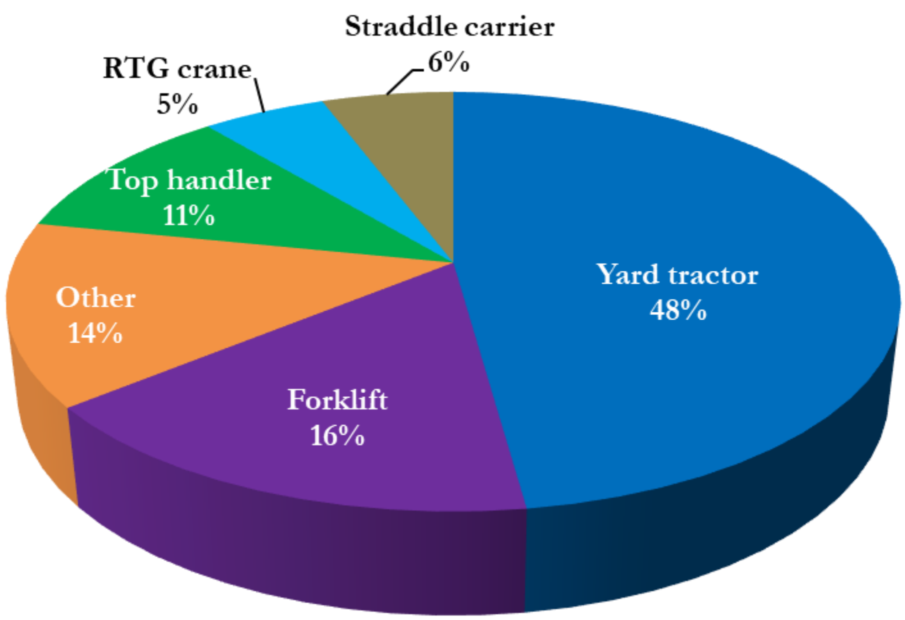
This section presents emissions estimates for the CHE source category, including source descriptions, geographical domain, data acquisition, operational profiles, emissions estimation methodology, and emission estimates.

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, liquefied natural gas (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 1,930 pieces of equipment inventoried at the Port for calendar year 2021. The 14% 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: 2021 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 CHE 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 2021calendar year.

Operational Profiles

Table 5.1 summarizes the cargo handling equipment data collected from the terminals and facilities for the calendar year 2021. The table includes the count of all equipment as well as the range and the average of 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 the missing information. Similar to previous year, defaults were used for 1% of engine model year values, 4% of horsepower values, and 1% of operating hours.

Table 5.1: 2021 CHE Engine Characteristics for All Terminals

Equipment	Engine Type	Count	Power (hp)			Model Year			Annual Activity Hours		
			Min	Max	Average	Min	Max	Average	Min	Max	Average
Stacking crane	Electric	29	na	na	na	na	na	na	961	2,869	2,151
Bulldozer	Diesel	3	200	310	237	2006	2007	2007	137	591	326
Cone Vehicle	Diesel	21	25	35	33	2010	2015	2013	1	5,071	1,196
Crane	Diesel	7	130	751	268	1987	2014	2001	25	1,131	409
Crane	Electric	3	na	na	na	na	na	na	929	1,045	975
Wharf crane	Electric	88	na	na	na	na	na	na	0	5,044	1,627
Forklift	Diesel	100	56	388	180	1993	2021	2012	0	2,501	507
Forklift	Electric	28	na	na	na	na	na	na	0	432	194
Forklift	Gasoline	6	45	45	45	2010	2012	2011	55	494	274
Forklift	Propane	180	42	200	81	1988	2021	2007	0	2,179	387
Loader	Diesel	14	55	527	311	2005	2020	2012	0	3,921	1,418
Loader	Electric	2	na	na	na	na	na	na	na	na	na
Man lift	Diesel	20	49	110	81	2000	2018	2008	0	461	167
Man lift	Electric	5	na	na	na	na	na	na	na	na	na
Man lift	Gasoline	1	60	60	60	2007	2007	2007	102	102	102
Material handler	Diesel	12	268	475	390	2005	2020	2010	598	3,379	1,885
Rail pusher	Diesel	1	194	194	194	2012	2012	2012	2,421	2,421	2,421
Reach stacker	Diesel	1	250	250	250	2013	2013	2013	31	31	31
Hybrid RTG	Diesel	16	137	302	255	2009	2018	2016	174	5,493	2,541
RTG crane	Diesel	86	320	779	632	2002	2020	2009	0	4,611	2,517
Side pick	Diesel	18	152	275	236	2000	2020	2015	0	3,721	533
Skid steer loader	Diesel	5	56	75	69	1994	2018	2008	18	955	525
Hybrid straddle carrier	Diesel	82	102	103	103	2016	2019	2018	117	3,775	2,142
Straddle carrier	Diesel	28	425	425	425	2013	2015	2014	869	6,323	5,256
Sweeper	Diesel	6	96	210	175	2000	2019	2014	227	887	396
Sweeper	Gasoline	3	205	205	205	2005	2018	2013	na	na	na
Telehandler	Diesel	7	74	130	82	2013	2021	2017	51	532	230
Top handler	Diesel	205	250	400	337	1999	2021	2012	0	4,499	2,419
Top handler	Electric	2	na	na	na	2019	2019	2019	na	na	na
Truck	Diesel	24	185	598	373	1988	2020	2008	18	2,434	685
Truck	Propane	1	na	na	na	1973	1973	1973	266	266	266
Yard tractor	Diesel	737	158	250	228	1995	2020	2012	0	5,286	2,038
Yard tractor	Electric	5	na	na	na	2019	2019	2019	na	na	na
Yard tractor	LNG	22	250	250	250	2018	2018	2018	391	1,807	1,085
Yard tractor	Propane	158	174	231	200	2000	2011	2007	0	3,756	1,663
Total count		**1,926**									

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 2021, renewable diesel was used by several terminals for the first time. Hybrid equipment count, especially hybrid straddle carriers, continued to increase since the previous year.

Table 5.2: 2021 Count of CHE Utilizing Emission Reduction Technologies

Equipment	On-Road Engines	DPF Retrofit	Hybrid	BlueCAT LSI Equip	Renewable Diesel
Forklift	0	32	0	26	8
RTG crane	0	39	16	0	27
Straddle carrier	0	0	82	0	40
Top handler	0	60	0	0	62
Yard tractor	617	4	0	0	272
Sweeper	0	1	0	0	1
Other	12	37	0	0	31
Total	**629**	**173**	**98**	**26**	**441**

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 other fossil fueled equipment include 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: 2021 Count of CHE Equipment by Fuel Type

Equipment	Electric	LNG	Propane	Gasoline	Diesel	Total
Forklift	28	0	180	6	100	314
Wharf crane	88	0	0	0	0	88
RTG crane	0	0	0	0	102	102
Straddle carrier	0	0	0	0	110	110
Top handler	2	0	0	0	205	207
Yard tractor	5	22	158	0	737	922
Other	39	0	1	4	139	183
Total	**162**	**22**	**339**	**10**	**1,393**	**1,926**

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[10] (Tier 0, 1, 2, 3, 4 interim, and 4 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: 2021 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	22	32	24	0	14	100
RTG crane	0	0	36	2	37	27	0	0	102
Side pick	0	2	0	0	0	13	0	3	18
Top handler	0	2	21	38	38	102	0	4	205
Yard tractor	4	0	0	0	21	91	617	4	737
Other	4	5	11	27	19	40	12	3	121
Straddle carrier	0	0	0	0	17	93	0	0	110
Total	**9**	**9**	**75**	**89**	**164**	**390**	**629**	**28**	**1,393**
Percent	**1%**	**1%**	**5%**	**6%**	**12%**	**28%**	**45%**	**2%**	

DB ID878

[10] 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 tier was distributed among other tiers based on defaults used for missing model year or horsepower for emissions calculations.

Table 5.5: 2021 Equipment Energy Consumption by Engine Tier, kWh and %

Engine Type	Engine Tier	Energy Consumption kWh	Percent Total
Diesel	Tier 0	557,393	0.2%
Diesel	Tier 1	318,407	0.1%
Diesel	Tier 2	12,305,929	5.1%
Diesel	Tier 3	14,764,944	6.1%
Diesel	Tier 4i	36,149,074	15.0%
Diesel	Tier 4f	70,615,160	29.3%
Diesel	Onroad engines	89,388,413	37.1%
Gasoline		142,709	0.1%
Propane		16,300,191	6.8%
LNG		154,110	0.1%
Total		**240,696,329**	

Emissions Estimation Methodology

The emissions calculation methodology and the emission rates are described in Section 4 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3. The Port's emissions calculation methodology used to estimate CHE emissions is consistent with CARB's latest methodology for estimating emissions from CHE.[11]

[11]CARB, Appendix B: Emission Estimation Methodology for Cargo Handling Equipment Operating at Ports and Intermodal Rail Yards in California. *www.arb.ca.gov/regact/2011/cargo11/cargoappb.pdf*

Emission Estimates

Table 5.6 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 5.6: 2021 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	0.4	0.4	0.4	28.2	0.1	24.9	3.2	8,364
Container	5.8	5.4	4.4	370.7	1.9	717.9	79.8	169,063
Cruise	0.0	0.0	0.0	0.1	0.0	0.6	0.0	48
Dry Bulk	0.1	0.1	0.1	7.1	0.0	6.5	0.6	454
Liquid	0.0	0.0	0.0	0.1	0.0	0.2	0.1	49
Other	0.2	0.2	0.2	8.0	0.1	29.5	1.8	6,856
Total	**6.5**	**6.0**	**5.0**	**414.2**	**2.0**	**779.8**	**85.5**	**184,837**

Table 5.7 presents the emissions by cargo handling equipment type and engine type.

Table 5.7: 2021 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	0.4	0.0	0.2	0.0	82
Cone vehicle	Diesel	0.0	0.0	0.0	1.9	0.0	2.7	0.2	236
Crane	Diesel	0.1	0.1	0.1	2.5	0.0	1.1	0.2	292
Forklift	Diesel	0.1	0.1	0.1	5.8	0.0	7.0	0.5	1,600
Forklift	Gasoline	0.0	0.0	0.0	0.0	0.0	0.7	0.1	18
Forklift	Propane	0.1	0.1	0.0	4.2	0.0	31.1	1.4	1,122
Loader	Diesel	0.1	0.1	0.1	6.5	0.0	6.3	0.9	2,590
Man lift	Diesel	0.0	0.0	0.0	0.7	0.0	0.6	0.1	86
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	13.1	0.0	6.2	1.3	2,909
Rail pusher	Diesel	0.0	0.0	0.0	0.4	0.0	0.3	0.1	138
Reach stacker	Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Hybrid RTG	Diesel	0.0	0.0	0.0	0.9	0.0	2.7	0.3	1,254
RTG crane	Diesel	1.2	1.1	1.2	96.6	0.2	34.2	7.6	15,702
Side pick	Diesel	0.0	0.0	0.0	0.7	0.0	1.8	0.2	800
Skid steer loader	Diesel	0.0	0.0	0.0	0.4	0.0	0.4	0.0	56
Hybrid Straddle Carrier	Diesel	0.0	0.0	0.0	1.1	0.0	13.4	0.5	2,063
Straddle carrier	Diesel	0.2	0.2	0.2	14.3	0.1	15.7	2.5	6,930
Sweeper	Diesel	0.0	0.0	0.0	0.2	0.0	0.5	0.0	169
Sweeper	Gasoline	0.0	0.0	0.0	0.3	0.0	2.6	0.0	123
Telehandler	Diesel	0.0	0.0	0.0	0.1	0.0	0.1	0.0	26
Top handler	Diesel	1.5	1.4	1.5	114.3	0.6	125.7	19.4	56,762
Truck	Diesel	0.2	0.2	0.2	4.8	0.0	3.9	0.4	1,886
Truck	Propane	0.0	0.0	0.0	0.7	0.0	1.5	0.1	34
Yard tractor	Diesel	1.4	1.3	1.4	86.4	1.0	186.5	11.9	75,461
Yard tractor	LNG	0.0	0.0	0.0	0.0	0.0	0.6	0.0	759
Yard tractor	Propane	1.3	1.3	0.0	57.8	0.0	333.9	37.8	13,736
Total		**6.5**	**6.0**	**5.0**	**414.2**	**2.0**	**779.8**	**85.5**	**184,837**

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 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 2021 and the percentage of fuel used by locomotives in each tier. 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 3 (2021).[12]

Table 6.1: PHL Switching Fleet Mix, 2021

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%**

[12] *www.portoflosangeles.org/environment/air-quality/air-emissions-inventory*

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 3.[13]

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 3.[14] Tables that contain information specific to this EI are presented below.

Table 6.2 presents the MOU compliance information submitted by both railroads and the composite of both railroads' pre-Tier 0 through Tier 4 locomotive NO_x emissions for calendar year 2020, showing a weighted average NO_x emission factor of 5.31 g/hphr.[15] The 2020 reports were used instead of the 2021 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 2021 compliance report will be used for the future 2022 EI.

[13] *www.portoflosangeles.org/environment/air-quality/air-emissions-inventory*
[14] *www.portoflosangeles.org/environment/air-quality/air-emissions-inventory*
[15] 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 2020.

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 NOx (g/bhp-hr)	Tier Contribution to Fleet Average (g/bhp-hr)
BNSF					
Pre-Tier 0	298	955	0.4%	13.0	0.06
Tier 0	61	5,317	2.4%	11.2	0.27
Tier 1	1,248	59,960	27%	6.1	1.65
Tier 2	1,737	79,605	36%	4.7	1.69
Tier 3	1,300	58,929	27%	3.8	1.01
Tier 4	283	16,691	7.5%	1.0	0.08
ULEL	0	0	0%	-	-
Total BNSF	**4,927**	**221,457**	**100%**		**4.76**
UP					
Pre-Tier 0	10	226	0.1%	15.0	0.02
Tier 0	584	18,528	10%	8.4	0.87
Tier 1	1,546	67,626	38%	7.2	2.73
Tier 2	1,326	52,172	29%	5.2	1.52
Tier 3	886	29,087	16%	4.9	0.80
Tier 4	250	10,591	5.9%	1.1	0.07
ULEL	0	0	0%		0.00
Total UP	**4,602**	**178,230**	**100%**		**6.01**
		ULEL Credit Used			0.50
		UP Fleet Average			**5.51**
Both RRs, excluding ULELs and ULEL credits					
Pre-Tier 0	308	1,181	0%	13.4	0.04
Tier 0	645	23,845	6%	9.0	0.54
Tier 1	2,794	127,586	32%	6.7	2.13
Tier 2	3,063	131,777	33%	4.9	1.61
Tier 3	2,186	88,016	22%	4.2	0.92
Tier 4	533	27,282	6.83%	1.0	0.071
Total both	**9,529**	**399,687**	**100%**		**5.31**

Emission factors for particulate matter (PM_{10}), HC, and CO were calculated using the tier-specific emission rates for those pollutants published by EPA.[16] 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}	EPA Tier-specific HC	EPA Tier-specific CO	Fleet Composite PM_{10}	Fleet Composite HC	Fleet Composite CO
			g/bhp-hr			g/bhp-hr		
Pre-Tier 0	1,181	0%	0.32	0.48	1.28	0.001	0.00	0.00
Tier 0	23,845	6%	0.32	0.48	1.28	0.019	0.03	0.08
Tier 1	127,586	32%	0.32	0.47	1.28	0.102	0.15	0.41
Tier 2	131,777	33%	0.18	0.26	1.28	0.059	0.09	0.42
Tier 3	88,016	22%	0.08	0.13	1.28	0.018	0.03	0.28
Tier 4	27,282	7%	0.015	0.04	1.28	0.000	0.00	0.09
Totals	**399,687**	**100%**				**0.199**	**0.30**	**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	0.199	0.183	0.199	5.31	0.005	1.28	0.30	489	0.013	0.040

[16] 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: 2021 Estimated On-Port Line Haul Locomotive Activity

Activity Measure	Inbound	Outbound	Total
Trains per Year	3,900	3,338	7,238
Locomotives per Train	3	3	N/A
Hours on Port per Trip	1	2.5	N/A
Locomotive Hours per Year	11,700	25,035	36,735

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 0.953 gallons per thousand gross ton-miles.[17] 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: 2021 Gross Ton-Mile, Fuel Use, and Horsepower-hour Estimate

	Distance miles	Trains per year	MMGT per year	MMGT-miles per year
Alameda Corridor	21	5,131	38	798
Central LA to Air Basin Boundary	84	5,131	38	3,192
Million gross ton-miles				**3,990**
Estimated gallons of fuel (millions)				**3.80**
Estimated million horsepower-hour				**79.0**

[17] Union Pacific, *Class I Railroad Annual Report R-1 to the Surface Transportation Board for the Year Ending Dec. 31, 2016* and BNSF, *Class I Railroad Annual Report R-1 to the Surface Transportation Board for the Year Ending Dec. 31, 2016, www. prod.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 emissions include operations within the Port and maritime industry-related emissions 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: 2021 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	0.5	0.5	0.5	46.4	0.06	17.3	2.7	5,794
Line Haul	26.4	24.3	26.4	704.2	0.66	169.8	39.5	59,422
Total	**26.9**	**24.7**	**26.9**	**750.6**	**0.72**	**187.0**	**42.2**	**65,216**

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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 the 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 the 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.

While most of the trucks are diesel-fueled vehicles, alternatively fueled trucks, primarily those fueled by liquefied natural gas (LNG) also service the SPBP. The emission estimates prepared using this methodology reflect the use of both types of fuel.

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

The 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 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 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 2021, the total number of terminal calls associated with the Port's container terminals and non-container facilities was 4,405.812 and 482,613, respectively. The total number of container terminal calls 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 2021, totaling approximately 27,000 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

	Speed (mph)	Distance (miles)	Gate In (hours)	Unload/ Load (hours)	Gate Out (hours)
Maximum	15	1.9	0.42	1.22	0.08
Minimum	10	0.9	0.16	0.67	0.04
Average	13	1.5	0.27	0.97	0.06

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

	Speed (mph)	Distance (miles)	Gate In (hours)	Unload/ Load (hours)	Gate Out (hours)
Maximum	20	1.3	0.08	0.47	0.05
Minimum	0	0.0	0.00	0.00	0.00
Average	8	0.5	0.04	0.21	0.01

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: 2021 Estimated On-Terminal VMT and Idling Hours by Terminal

Terminal Type	Total Miles Traveled	Total Hours Idling (all trips)
Container	1,623,258	1,504,219
Container	1,456,797	1,349,965
Container	1,096,233	1,096,233
Container	961,834	589,123
Container	903,057	579,857
Container	490,663	583,344
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	227,847	102,531
Other	65,000	8,000
Other	13,520	1,976
Other	2,727	12,815
Other	1,900	3,325
Other	40	320
Total	**6,889,893**	**5,847,109**

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 3. 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 2021 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, 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

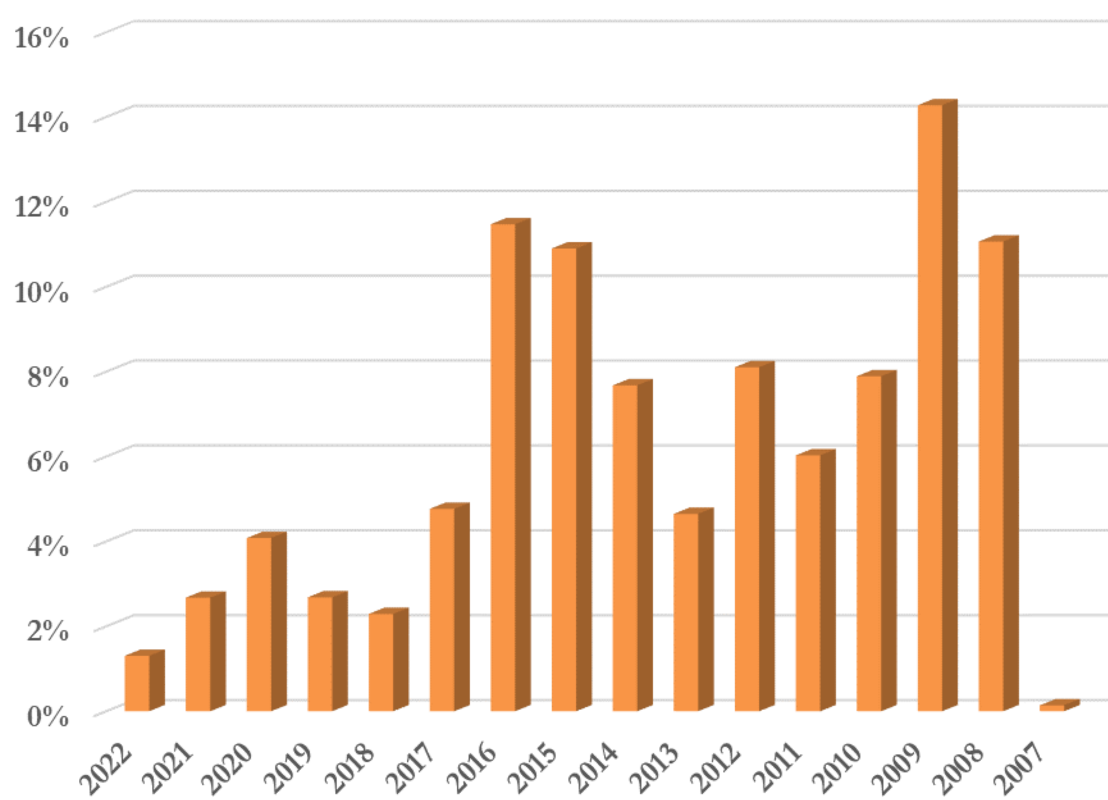
Speed range (mph)		PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2	N_2O	CH_4	Units
Idle		0.0061	0.0059	0.0038	24.8177	0.0518	29.8487	3.5880	6,169	0.9057	1.1897	g/hr
> 0	5	0.0301	0.0288	0.0297	12.1792	0.0322	3.9806	1.0735	3,611	0.5790	0.4958	g/mi
5	10	0.0270	0.0258	0.0266	9.6771	0.0277	3.1707	0.7742	3,103	0.4968	0.3280	g/mi
10	15	0.0230	0.0220	0.0227	7.1820	0.0229	2.3040	0.4960	2,547	0.4073	0.1946	g/mi
15	20	0.0204	0.0195	0.0202	5.8293	0.0200	1.7736	0.3517	2,224	0.3554	0.1371	g/mi
20	25	0.0188	0.0180	0.0186	4.9611	0.0181	1.4081	0.2637	2,010	0.3210	0.1052	g/mi
25	30	0.0181	0.0173	0.0179	4.2959	0.0167	1.1259	0.2033	1,848	0.2950	0.0848	g/mi
30	35	0.0181	0.0173	0.0180	3.7800	0.0156	0.9033	0.1596	1,722	0.2749	0.0706	g/mi
35	40	0.0189	0.0181	0.0188	3.4012	0.0148	0.7308	0.1276	1,629	0.2599	0.0603	g/mi
40	45	0.0204	0.0195	0.0203	3.1496	0.0142	0.6016	0.1042	1,566	0.2497	0.0525	g/mi
45	50	0.0225	0.0215	0.0224	3.0228	0.0139	0.5104	0.0871	1,530	0.2440	0.0465	g/mi
50	55	0.0253	0.0242	0.0252	3.0183	0.0139	0.4536	0.0748	1,522	0.2425	0.0417	g/mi
55	60	0.0289	0.0277	0.0289	3.1663	0.0141	0.4426	0.0728	1,551	0.2471	0.0416	g/mi
60	65	0.0333	0.0319	0.0333	3.4558	0.0147	0.4498	0.0750	1,612	0.2566	0.0417	g/mi
65	70	0.0333	0.0319	0.0333	3.4716	0.0147	0.4500	0.0750	1,612	0.2566	0.0417	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 2021 model year distribution for the current emissions inventory was based on call data originating from radio frequency identification (RFID) data, which tracked over 7 million truck calls made to the Port of Los Angeles and the Port of Long Beach in 2021, 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 2021, 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 2021 was approximately 7 years. The share of mileage driven by 2014 and newer model year trucks increased from 34% in 2020 to 48% in 2021, significantly reducing emissions of NO_x and other pollutants.

Figure 7.1: 2021 Model Year Distribution of the Heavy-Duty Truck Fleet



Emission Estimates

The estimates of 2021 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 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 was 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: 2021 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_2e tonnes
On-Terminal	6,889,893	0.2	0.2	0.2	223	0.5	212.8	27.8	58,007
On-Road	238,564,695	5.8	5.6	5.8	819	3.7	143.0	24.5	386,806
Total	**245,454,587**	**6.0**	**5.8**	**6.0**	**1,042**	**4.2**	**355.8**	**52.4**	**444,814**

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

Table 7.6: 2021 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	6,531,841	0.2	0.2	0.2	215.7	0.5	207.0	27.0	56,056
On-Road	211,117,724	5.1	4.9	5.1	726.4	3.3	127.1	21.8	342,549
Total	**217,649,565**	**5.4**	**5.1**	**5.3**	**942**	**3.8**	**334.1**	**48.8**	**398,605**

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

Table 7.7: 2021 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	358,052	0.01	0.01	0.01	7.1	0.0	5.8	0.8	1,952
On-Road	27,446,970	0.7	0.6	0.7	92.8	0.4	15.9	2.7	44,257
Total	**27,805,022**	**0.7**	**0.7**	**0.7**	**100**	**0.4**	**21.7**	**3.5**	**46,209**

SECTION 8 SUMMARY OF 2021 EMISSION RESULTS

Table 8.1 summarizes the 2021 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 subcategory. Table 8.7 presents the CO_2e emissions in the context of Port-wide emissions.

Table 8.1: 2021 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	127	117	83	5,956	248	605	255	504,842
Harbor craft	15	15	15	565	1	112	29	53,521
Cargo handling equipment	6	6	5	414	2	780	86	184,837
Locomotives	27	25	27	751	1	187	42	65,216
Heavy-duty vehicles	6	6	6	1,042	4	356	52	444,814
Total	**182**	**168**	**136**	**8,729**	**255**	**2,040**	**464**	**1,253,229**

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Table 8.2: 2021 PM_{10} Emissions by Category and Percent Contribution

Category	Subcategory	PM_{10}	Percent PM_{10} Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	0.7	1%	0%	0.0%
OGV	Bulk vessel	4.3	3%	2%	0.0%
OGV	Containership	90.0	71%	49%	0.2%
OGV	Cruise	18.4	14%	10%	0.0%
OGV	General cargo	2.4	2%	1%	0.0%
OGV	Other	0.1	0%	0%	0.0%
OGV	Reefer	0.6	0%	0%	0.0%
OGV	Tanker	10.6	8%	6%	0.0%
OGV	**Subtotal**	**127**	**100%**	**70%**	**0.2%**
Harbor Craft	Assist tug	2.1	14%	1%	0.0%
Harbor Craft	ATB and barge	1.9	12%	1%	0.0%
Harbor Craft	Harbor tug	0.6	4%	0%	0.0%
Harbor Craft	Commercial fishing	4.5	29%	2%	0.0%
Harbor Craft	Ferry	1.7	11%	1%	0.0%
Harbor Craft	Ocean tugboat	2.4	15%	1%	0.0%
Harbor Craft	Government	0.3	2%	0%	0.0%
Harbor Craft	Excursion	0.6	4%	0%	0.0%
Harbor Craft	Crewboat	1.0	7%	1%	0.0%
Harbor Craft	Work boat	0.4	2%	0%	0.0%
Harbor Craft	**Subtotal**	**15**	**100%**	**8%**	**0.0%**
CHE	RTG crane	1.3	19%	1%	0.0%
CHE	Forklift	0.2	3%	0%	0.0%
CHE	Top handler, side pick	1.6	24%	1%	0.0%
CHE	Other	0.8	12%	0%	0.0%
CHE	Yard tractor	2.7	42%	2%	0.0%
CHE	**Subtotal**	**6**	**100%**	**4%**	**0.0%**
Locomotives	Switching	0.5	2%	0%	0.0%
Locomotives	Line haul	26.4	98%	15%	0.0%
Locomotives	**Subtotal**	**27**	**100%**	**15%**	**0.1%**
HDV	On-Terminal	0.2	4%	0%	0.0%
HDV	On-Road	5.8	96%	3%	0.0%
HDV	**Subtotal**	**6**	**100%**	**3%**	**0.0%**
Port	**Total**	**182**		**100%**	**0.3%**
SoCAB AQMP	**Total**	**53,600**			

Table 8.3: 2021 $PM_{2.5}$ Emissions by Category and Percent Contribution

			Percent $PM_{2.5}$ Emissions of Total		
Category	**Subcategory**	**$PM_{2.5}$**	**Category**	**Port**	**SoCAB AQMP**
OGV	Auto carrier	0.7	1%	0%	0.0%
OGV	Bulk vessel	3.9	3%	2%	0.0%
OGV	Containership	82.8	71%	49%	0.4%
OGV	Cruise	16.9	14%	10%	0.1%
OGV	General cargo	2.2	2%	1%	0.0%
OGV	Other	0.1	0%	0%	0.0%
OGV	Reefer	0.6	0%	0%	0.0%
OGV	Tanker	9.7	8%	6%	0.0%
OGV	**Subtotal**	**117**	**100%**	**70%**	**0.6%**
Harbor Craft	Assist tug	2.0	14%	1%	0.0%
Harbor Craft	ATB and barge	1.8	13%	1%	0.0%
Harbor Craft	Harbor tug	0.6	4%	0%	0.0%
Harbor Craft	Commercial fishing	4.3	29%	3%	0.0%
Harbor Craft	Ferry	1.6	11%	1%	0.0%
Harbor Craft	Ocean tugboat	2.2	15%	1%	0.0%
Harbor Craft	Government	0.3	2%	0%	0.0%
Harbor Craft	Excursion	0.5	4%	0%	0.0%
Harbor Craft	Crewboat	0.9	6%	1%	0.0%
Harbor Craft	Work boat	0.3	2%	0%	0.0%
Harbor Craft	**Subtotal**	**15**	**100%**	**9%**	**0.1%**
CHE	RTG crane	1.2	19%	1%	0.0%
CHE	Forklift	0.2	3%	0%	0.0%
CHE	Top handler, side pick	1.4	23%	1%	0.0%
CHE	Other	0.7	11%	0%	0.0%
CHE	Yard tractor	2.6	43%	2%	0.0%
CHE	**Subtotal**	**6**	**100%**	**4%**	**0.0%**
Locomotives	Switching	0.5	2%	0%	0.0%
Locomotives	Line haul	24.3	98%	14%	0.1%
Locomotives	**Subtotal**	**25**	**100%**	**15%**	**0.1%**
HDV	On-Terminal	0.2	4%	0%	0.0%
HDV	On-Road	5.6	96%	3%	0.0%
HDV	**Subtotal**	**6**	**100%**	**3%**	**0.0%**
Port	**Total**	**168**		**100%**	**0.8%**
SoCAB AQMP	**Total**	**20,970**			

Table 8.4: 2021 DPM Emissions by Category and Percent Contribution

Category	Subcategory	DPM	Percent DPM Emissions of Total Category	Port	SoCAB AQMP
OGV	Auto carrier	0.6	1%	0%	0.0%
OGV	Bulk vessel	2.9	3%	2%	0.2%
OGV	Containership	56.4	68%	41%	4.1%
OGV	Cruise	15.9	19%	12%	1.2%
OGV	General cargo	1.3	2%	1%	0.1%
OGV	Other	0.1	0%	0%	0.0%
OGV	Reefer	0.5	1%	0%	0.0%
OGV	Tanker	5.5	7%	4%	0.4%
OGV	**Subtotal**	**83**	**100%**	**61%**	**6.1%**
Harbor Craft	Assist tug	2.1	14%	2%	0.2%
Harbor Craft	ATB and barge	1.9	12%	1%	0.1%
Harbor Craft	Harbor tug	0.6	4%	0%	0.0%
Harbor Craft	Commercial fishing	4.5	29%	3%	0.3%
Harbor Craft	Ferry	1.7	11%	1%	0.1%
Harbor Craft	Ocean tugboat	2.4	15%	2%	0.2%
Harbor Craft	Government	0.3	2%	0%	0.0%
Harbor Craft	Excursion	0.6	4%	0%	0.0%
Harbor Craft	Crewboat	1.0	7%	1%	0.1%
Harbor Craft	Work boat	0.4	2%	0%	0.0%
Harbor Craft	**Subtotal**	**15**	**100%**	**11%**	**1.1%**
CHE	RTG crane	1.3	25%	1%	0.1%
CHE	Forklift	0.1	1%	0%	0.0%
CHE	Top handler, side pick	1.6	31%	1%	0.1%
CHE	Other	0.7	15%	1%	0.1%
CHE	Yard tractor	1.4	28%	1%	0.1%
CHE	**Subtotal**	**5**	**100%**	**4%**	**0.4%**
Locomotives	Switching	0.5	2%	0%	0.0%
Locomotives	Line haul	26.4	98%	19%	1.9%
Locomotives	**Subtotal**	**27**	**100%**	**20%**	**2.0%**
HDV	On-Terminal	0.2	3%	0%	0.0%
HDV	On-Road	5.8	97%	4%	0.4%
HDV	**Subtotal**	**6**	**100%**	**4%**	**0.4%**
Port	**Total**	**136**		**100%**	**10.0%**
SoCAB AQMP	**Total**	**1,363**			

Table 8.5: 2021 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	53	1%	1%	0.0%
OGV	Bulk vessel	201	3%	2%	0.2%
OGV	Containership	4,093	69%	47%	3.8%
OGV	Cruise	1,066	18%	12%	1.0%
OGV	General cargo	90	2%	1%	0.1%
OGV	Other	5	0%	0%	0.0%
OGV	Reefer	40	1%	0%	0.0%
OGV	Tanker	407	7%	5%	0.4%
OGV	**Subtotal**	**5,956**	**100%**	**68%**	**5.5%**
Harbor Craft	Assist tug	90	16%	1.0%	0.1%
Harbor Craft	ATB and barge	51	9%	0.6%	0.0%
Harbor Craft	Harbor tug	28	5%	0.3%	0.0%
Harbor Craft	Commercial fishing	131	23%	1.5%	0.1%
Harbor Craft	Ferry	81	14%	0.9%	0.1%
Harbor Craft	Ocean tugboat	81	14%	0.9%	0.1%
Harbor Craft	Government	11	2%	0.1%	0.0%
Harbor Craft	Excursion	26	5%	0.3%	0.0%
Harbor Craft	Crewboat	48	8%	0.5%	0.0%
Harbor Craft	Work boat	19	3%	0.2%	0.0%
Harbor Craft	**Subtotal**	**565**	**100%**	**6%**	**0.5%**
CHE	RTG crane	97	24%	1.1%	0.1%
CHE	Forklift	10	2%	0.1%	0.0%
CHE	Top handler, side pick	115	28%	1.3%	0.1%
CHE	Other	47	11%	0.5%	0.0%
CHE	Yard tractor	144	35%	1.7%	0.1%
CHE	**Subtotal**	**414**	**100%**	**5%**	**0.4%**
Locomotives	Switching	46	6%	0.5%	0.0%
Locomotives	Line haul	704	94%	8.1%	0.7%
Locomotives	**Subtotal**	**751**	**100%**	**9%**	**0.7%**
HDV	On-Terminal	223	21%	3%	0.2%
HDV	On-Road	819	79%	9%	0.8%
HDV	**Subtotal**	**1,042**	**100%**	**12%**	**1.0%**
Port	**Total**	**8,729**		**100%**	**8.1%**
SoCAB AQMP	**Total**	**107,336**			

Table 8.6: 2021 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	0.9	0%	0%	0%
OGV	Bulk vessel	9.9	4%	4%	0%
OGV	Containership	162.2	65%	64%	3%
OGV	Cruise	42.8	17%	17%	1%
OGV	General cargo	5.9	2%	2%	0%
OGV	Other	0.3	0%	0%	0%
OGV	Reefer	1.4	1%	1%	0%
OGV	Tanker	25.4	10%	10%	0%
OGV	**Subtotal**	**248.8**	**100%**	**97%**	**4%**
Harbor Craft	Assist tug	0.1	20%	0%	0%
Harbor Craft	ATB and barge	0.0	8%	0%	0%
Harbor Craft	Harbor tug	0.0	5%	0%	0%
Harbor Craft	Commercial fishing	0.1	20%	0%	0%
Harbor Craft	Ferry	0.1	15%	0%	0%
Harbor Craft	Ocean tugboat	0.1	10%	0%	0%
Harbor Craft	Government	0.0	2%	0%	0%
Harbor Craft	Excursion	0.0	6%	0%	0%
Harbor Craft	Crewboat	0.0	9%	0%	0%
Harbor Craft	Work boat	0.0	5%	0%	0%
Harbor Craft	**Subtotal**	**0.5**	**100%**	**0%**	**0%**
CHE	RTG crane	0.2	9%	0%	0%
CHE	Forklift	0.0	1%	0%	0%
CHE	Top handler, side pick	0.7	32%	0%	0%
CHE	Other	0.2	10%	0%	0%
CHE	Yard tractor	1.0	47%	0%	0%
CHE	**Subtotal**	**2.0**	**100%**	**1%**	**0%**
Locomotives	Switching	0.1	8%	0%	0%
Locomotives	Line haul	0.7	92%	0%	0%
Locomotives	**Subtotal**	**0.7**	**100%**	**0%**	**0%**
HDV	On-Terminal	0.5	12%	0%	0%
HDV	On-Road	3.7	88%	1%	0%
HDV	**Subtotal**	**4.2**	**100%**	**2%**	**0%**
Port	**Total**	**255**		**100%**	**4.2%**
SoCAB AQMP	**Total**	**6,160**			

Table 8.7: 2021 CO_2e Emissions by Category and Percent Contribution

Category	Subcategory	CO_2e	Percent CO_2e Emissions of Total Category	Port
OGV	Auto carrier	2,861	1%	0%
OGV	Bulk vessel	16,370	3%	1%
OGV	Containership	367,014	73%	29%
OGV	Cruise	64,648	13%	5%
OGV	General cargo	9,079	2%	1%
OGV	Other	425	0%	0%
OGV	Reefer	2,145	0%	0%
OGV	Tanker	42,302	8%	3%
OGV	**Subtotal**	**504,845**	**100%**	**40%**
Harbor Craft	Assist tug	10,940	20%	1%
Harbor Craft	ATB and barge	4,304	8%	0%
Harbor Craft	Harbor tug	2,819	5%	0%
Harbor Craft	Commercial fishing	10,874	20%	1%
Harbor Craft	Ferry	7,852	15%	1%
Harbor Craft	Ocean tugboat	5,421	10%	0%
Harbor Craft	Government	961	2%	0%
Harbor Craft	Excursion	2,976	6%	0%
Harbor Craft	Crewboat	4,704	9%	0%
Harbor Craft	Work boat	2,669	5%	0%
Harbor Craft	**Subtotal**	**53,521**	**100%**	**4%**
CHE	RTG crane	16,956	9%	1%
CHE	Forklift	2,739	1%	0%
CHE	Top handler, side pick	57,562	31%	5%
CHE	Other	17,625	10%	1%
CHE	Yard tractor	89,955	49%	7%
CHE	**Subtotal**	**184,837**	**100%**	**15%**
Locomotives	Switching	5,794	9%	0%
Locomotives	Line haul	59,422	91%	5%
Locomotives	**Subtotal**	**65,216**	**100%**	**5%**
HDV	On-Terminal	58,007	13%	5%
HDV	On-Road	386,806	87%	31%
HDV	**Subtotal**	**444,814**	**100%**	**35%**
Port	**Total**	**1,253,229**		**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 2021 SoCAB emissions were based on the 2016 AQMP Appendix III,[18] except for the SoCAB on-road emission estimates which were updated to take into consideration EMFAC2021.[19] Thus, the 2021 SoCAB total emissions do not exactly match 2016 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: 2021 PM_{10} Emissions in the South Coast Air Basin

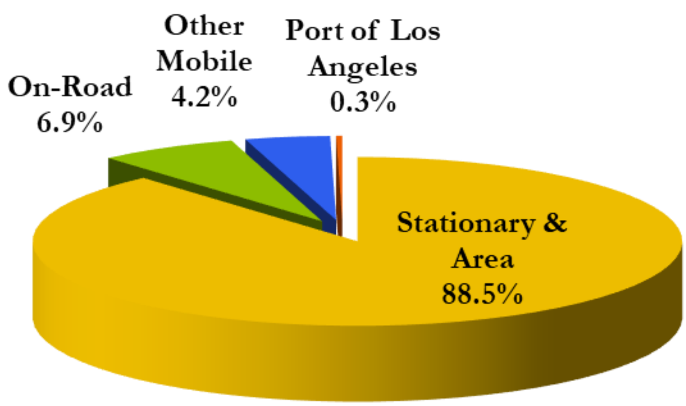
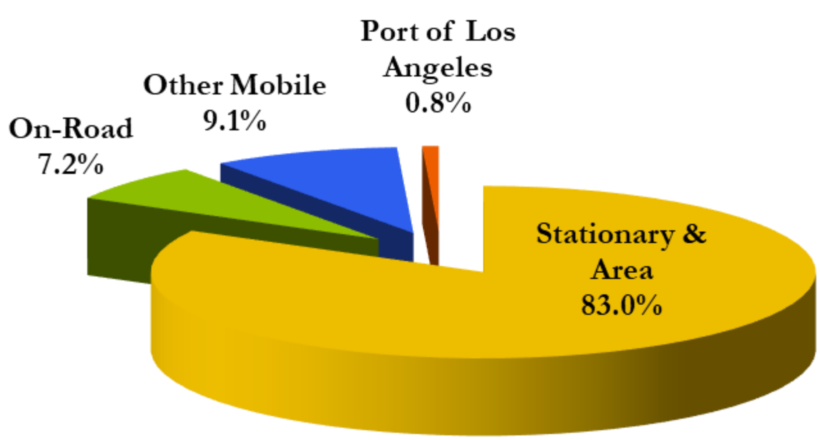


Figure 8.2: 2021 $PM_{2.5}$ Emissions in the South Coast Air Basin



[18]SCAQMD, *Final 2016 AQMP Appendix III, Base & Future Year Emissions Inventories*, March 2017. Except on-road emissions based on EMFAC2014 are replaced with EMFAC2021 estimates.
[19]*www.arb.ca.gov/emfac/*

Figure 8.3: 2021 DPM Emissions in the South Coast Air Basin

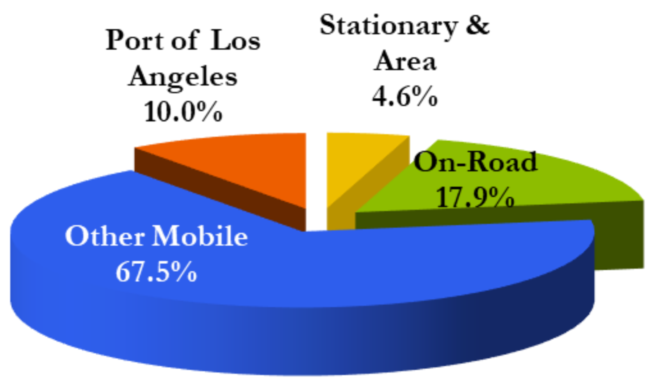


Figure 8.4: 2021 NO_x Emissions in the South Coast Air Basin

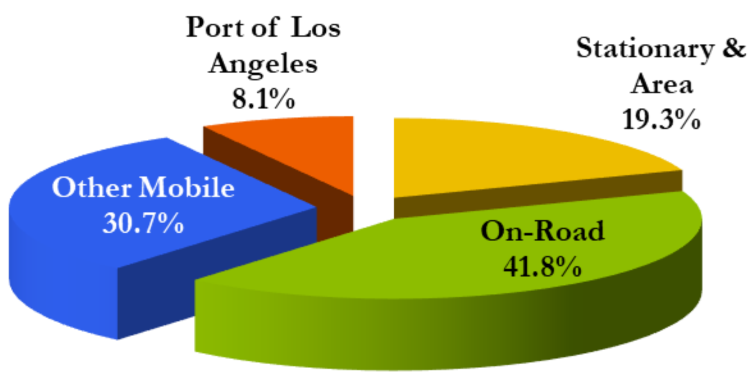
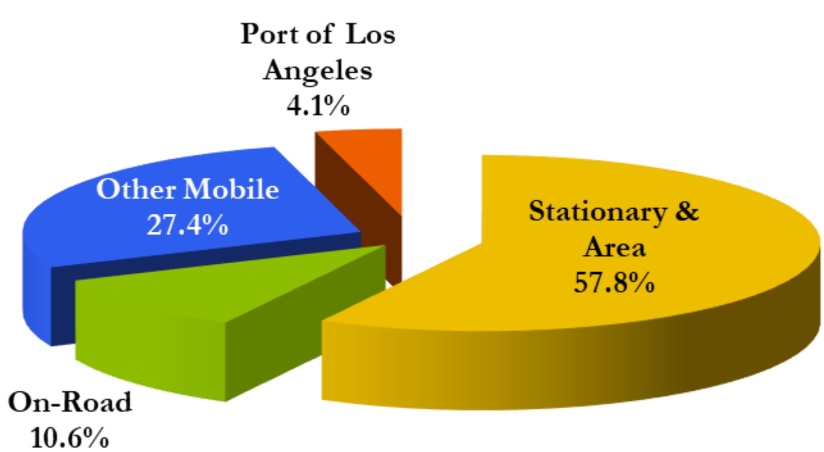


Figure 8.5: 2021 SO_x Emissions in the South Coast Air Basin



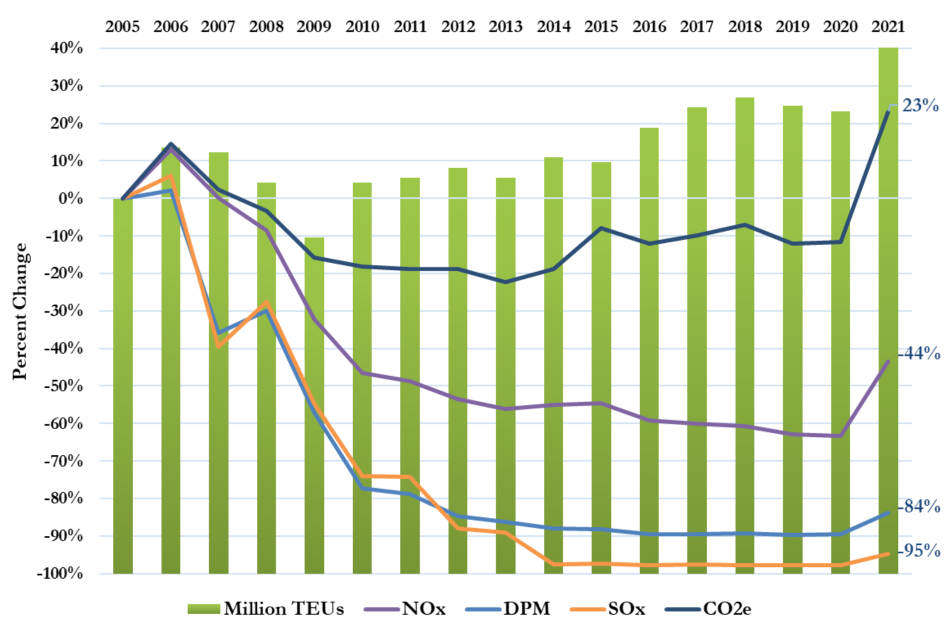
SECTION 9 COMPARISON OF 2021, 2005 AND PREVIOUS YEARS' FINDINGS AND EMISSION ESTIMATES

This section compares 2021 emissions to emissions in both the previous year 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 (2021 vs 2020) and for the CAAP Progress (2021 vs 2005) using 2021 methodology. Table 9.1 presents the port-wide emissions comparison for 2021, 2020, and 2005. Figure 9.1 illustrates the emissions trend for 2005 to 2021. For various pollutants, emissions more than doubled in 2021 as compared to 2020. Despite the 43% increase in throughput, 2021 emissions are lower than emissions in 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
2021	182	168	136	8,729	255	2,040	464	1,253,229
2020	107	99	87	5,672	104	1,491	306	899,453
2005	1,001	861	840	15,459	4,839	3,601	813	1,017,549
Previous Year (2020-2021)	**69%**	**69%**	**56%**	**54%**	**145%**	**37%**	**52%**	**39%**
CAAP Progress (2005-2021)	**-82%**	**-80%**	**-84%**	**-44%**	**-95%**	**-43%**	**-43%**	**23%**

Figure 9.1: Emissions Trend



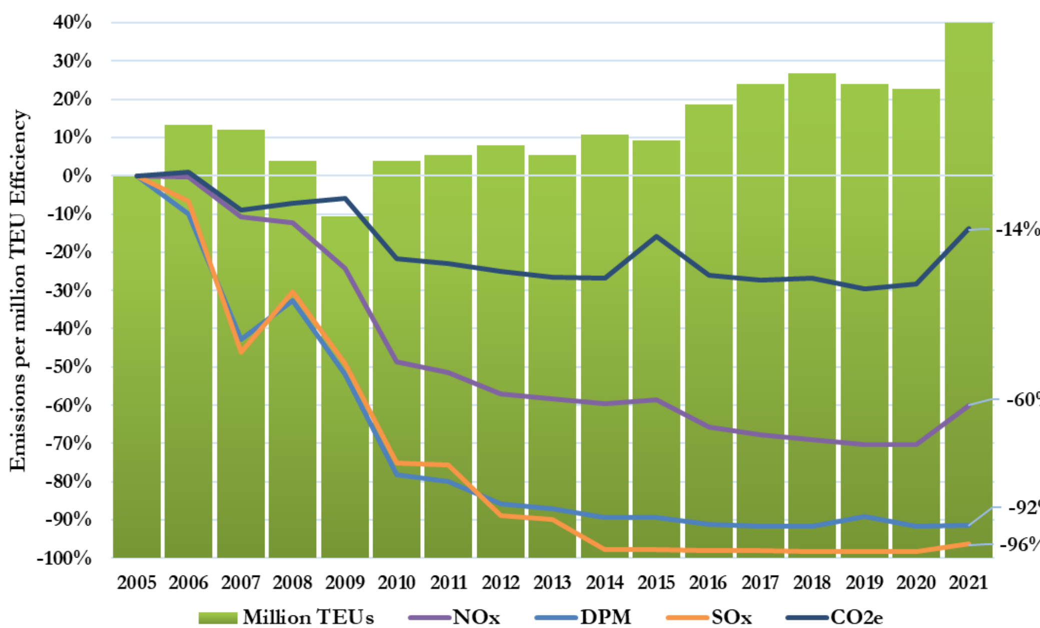
In order to measure progress of the various emission reduction goals, the Port has established metrics to track emissions per unit of work. In this section, the emissions efficiency table will be provided for each source category. Table 9.2 and Figure 9.2 show emissions efficiency as tons of emissions 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. The emissions per 10,000 TEU are not efficient in 2021as compared to 2020 due to the supply chain congestion that caused hundreds of vessels at a time to wait at anchorage as opposed to calling a berth. This inefficiency resulted in high OGV emissions, especially for hotelling emissions at anchorage.

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
2021	0.170	0.157	0.128	8.17	0.24	1.91	0.43	1,173
2020	0.116	0.108	0.095	6.16	0.11	1.62	0.33	977
2005	1.337	1.150	1.122	20.65	6.46	4.81	1.09	1,360
Previous Year (2020-2021)	**-47%**	**-45%**	**-35%**	**-33%**	**-118%**	**-18%**	**-30%**	**-20%**
CAAP Progress (2005-2021)	**91%**	**91%**	**92%**	**60%**	**96%**	**60%**	**61%**	**14%**

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

There was an update to the emission factors for steam powered main engines and the auxiliary and boiler defaults were updated for a few vessel types based on VBP data collected since the last inventory. The previous year OGV emissions were re-estimated to reflect the 2021 main steam engine emission factors and to remove ATB activity from the previous year estimates. The emissions calculation methodology and the emission rates are described in Section 2 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3.

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 2021, the previous year, and 2005. The following OGV emission reductions strategies are listed:

- Shore Power[20] refers to vessel calls using shore power at berth, instead of running their diesel-powered auxiliary engines.
- VSR[21] refers to the vessels reducing their transit speed to 12 knots or lower within 20 and 40 nm of the Port.
- ESI[22] refers to the number of vessel calls that participated in the Ports' ESI program and used ship-specific low sulfur (S) fuel, which in several cases contained S levels below the regulated S 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 number of 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	EIAPP Main Eng	EIAPP Aux Eng
2021	45%	97%	95%	45%	65%	63%
2020	46%	96%	93%	64%	73%	72%
2005	2%	65%	na	0%	5%	5%

DB ID1790

[20] *www.portoflosangeles.org/environment/air-quality/alternative-maritime-power-(amp)*
[21] *www.portoflosangeles.org/environment/air-quality/vessel-speed-reduction-program*
[22] *www.portoflosangeles.org/environment/air-quality/environmental-ship-index*

In 2021, in addition to the shore power calls listed in the table, an additional 6% of the vessel calls used alternative technology to comply with the CARB At-Berth Regulation. The alternative at-berth emission control technology used in 2021 was the Maritime Emissions Treatment System (METS). In 2021, vessels were more compliant with VSR potentially due to vessels slowing down to minimize wait time at anchorage due to supply chain congestion. ESI participation was 1% lower when compared to the previous year. Starting January 1, 2021, incentive receivers had to pay to participate in ESI program, thus many ship operators may have deregistered vessels from ESI program.

Since 2005, fuel switching from heavy fuel oil (HFO) to low sulfur content fuel, such as marine gas oil (MGO) or marine distillate oil (MDO), has played a major role in reducing emissions from OGVs. In 2005, fuel switching was voluntary and only 7% of main engines and 27% of auxiliary engines switched fuel. All vessels have switched fuel (100%) to 0.1% sulfur content MGO to comply with Phase II of CARB's marine fuel regulation and the North American Emissions Control Area (ECA) requirements or less than 0.1% S fuel reported by vessels participating in the ESI program.

Table 9.4 summarizes the percentage of calls utilizing the main engine IMO NO_x standards tiers (Tier) for 2021, the previous year, and 2005. The "No Tier" column characterizes vessels that do not have diesel engines, such as steamships. 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. In 2021, 26 vessels, including one auto carrier, 14 containerships, three general cargo, and eight tankers, with certified Tier III main engines called the Port. Compared to the previous year, the number of Tier II and III engines continues to increase as newer vessels call the Port.

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
2021	6.0%	59.6%	31.6%	2.6%	0.2%
2020	5.5%	61.1%	29.6%	1.8%	1.9%
2005	58.5%	37.3%	0.0%	0.0%	4.1%

DB ID1789

Table 9.5 presents the OGV activity by engine type in terms of total energy consumption (expressed as kWh). In 2021, the total energy consumption doubled compared to the previous year and increased by 39% compared to 2005. The kWh associated with the METS technology generators were included in the total auxiliary engine kWh shown in the table.

The main engine activity has decreased since 2005 mainly due to the VSR program and fewer vessel calls. The auxiliary engine and boiler activity increased significantly in 2021 due to longer times vessels spent at berth and at anchorage. In 2021, there was also a record number of anchorage calls by all vessel types, but especially containerships. Auxiliary engine and boiler use doubled in 2021 from 2020 due to these factors which also resulted in higher emissions.

Table 9.5: OGV Energy Consumption Comparison, kWh

Year	All Engines Total kWh	Main Eng Total kWh	Aux Eng Total kWh	Boiler Total kWh
2021	627,759,462	56,677,823	356,707,007	213,667,220
2020	264,274,822	55,640,312	119,223,317	88,645,691
2005	368,090,564	105,039,729	187,136,308	75,914,527
Previous Year (2020-2021)	**138%**	**2%**	**199%**	**141%**
CAAP Progress (2005-2021)	**71%**	**-46%**	**91%**	**181%**

Table 9.6 compares the OGV emissions for calendar years 2021, 2020, and 2005. Reductions in OGV emissions since 2005 for PM and SO_x emissions are mainly attributed to CARB marine fuel regulation, use of shore power, and the Port's ESI-based incentive program. Emissions doubled for most pollutants in 2021 as compared to the previous year due to longer stays at berth and more anchorage calls than ever before by containerships.

Table 9.6: OGV Emissions Comparison

EI Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2021	127	117	83	5,956	248	605	255	504,842
2020	52	48	34	2,879	97	273	127	213,981
2005	609	489	449	5,160	4,683	468	215	280,853
Previous Year (2020-2021)	**143%**	**143%**	**147%**	**107%**	**154%**	**121%**	**101%**	**136%**
CAAP Progress (2005-2021)	**-79%**	**-76%**	**-81%**	**15%**	**-95%**	**29%**	**19%**	**80%**

DB ID692

Table 9.7 shows the emissions efficiency changes between 2021, the previous year, 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
2021	0.12	0.11	0.08	5.58	0.23	0.57	0.24
2020	0.06	0.05	0.04	3.12	0.11	0.30	0.14
2005	0.81	0.65	0.60	6.89	6.26	0.63	0.29
Previous Year (2020-2021)	**-100%**	**-120%**	**-100%**	**-79%**	**-109%**	**-90%**	**-71%**
CAAP Progress (2005-2021)	**85%**	**83%**	**87%**	**19%**	**96%**	**10%**	**17%**

Between 2020 and 2021, OGV emissions increased significantly due to more vessels at anchorage, as well as more time spent at berth, at anchorage, and at drift areas. These factors can be attributed mainly to impacts resulting from supply chain disruptions and demand in consumer goods which resulted in container surges. In addition, in order to protect workers during the COVID-19 pandemic, the limit on number of work gangs used at berth continued in 2021 which increased the vessel time spent at berth. The following tables and figures highlight the vessels at anchorage and the hotelling times.

Table 9.8 shows that the number of vessels at anchorage were 60% higher in 2021 than the previous year. All vessel types, except for tankers, were at anchorage more in 2021 than in 2020. Containerships doubled the number of vessels at anchorage and had the most vessels hotelling at anchorage in 2021. Due to the COVID-19 pandemic, 2020 also was not a typical year for vessels hotelling at anchorage either as more containerships than normal were at anchorage that year.

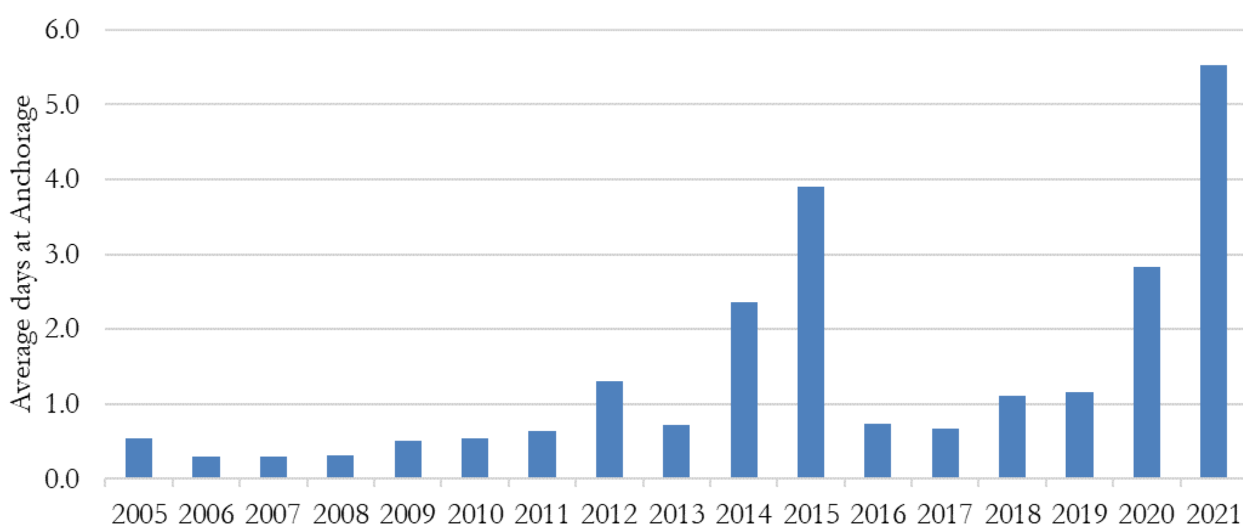
Table 9.8: 2021-2020 Anchorage Vessel Count Comparison

Vessel Type	2020 Anchorage Vessel Count	2021 Anchorage Vessel Count	2020-2021 Change
Containership	165	333	102%
Tanker	139	138	-1%
Cruise	9	14	56%
Bulk Carrier	42	85	102%
General cargo	20	30	50%
Other	9	14	56%
Total	**384**	**614**	**60%**

Figure 9.3 shows the count of containership calls at anchorage through the years for the Port, while Figure 9.4 shows the average number of days containerships spent at anchorage. Containerships do not anchor for very long unless there is some external issue such as a supply chain disruption like the 2015 temporary congestions at the Port that caused containerships to spend more time at anchorage.

Figure 9.3: Containership Number of Anchorage Calls Trend

Figure 9.4: Containership Average Days at Anchorage Trend



Based on the high number of vessels off the coast of southern California in summer and fall of 2021, a new container vessel queuing process[23] was implemented mid-November 2021 to increase safety and improve air quality near the ports of Los Angeles and Long Beach. The anchorage calls and vessels loitering continue to be monitored and the expectation are for the vessel count at anchorage to lessen as supply chain congestion is reduced.

Table 9.9 compares the average days at anchorage for containerships for 2020 and 2021. On average, containerships spent more time at anchorage in 2021 than in 2020 which resulted in higher emissions for hotelling at anchorage in 2021. The 4,000 and 8,000 TEU containerships had the most vessels at anchorage and their average time spent at anchorage was almost double in 2021 (6 days) from 2020 (3 days).

Table 9.9: 2021-2020 Containerships Average Days at Anchorage Comparison

Container Category	2020 Anchorage Avg Days	2021 Anchorage Avg Days	2020-2021 Change
Container - 1000	1.3	6.4	376%
Container - 2000	2.6	5.3	102%
Container - 3000	1.4	7.9	479%
Container - 4000	3.5	5.9	71%
Container - 5000	1.2	4.3	267%
Container - 6000	3.2	5.7	81%
Container - 7000	2.3	4.2	100%
Container - 8000	3.2	5.6	76%
Container - 9000	4.2	5.0	20%
Container - 10000	3.5	6.3	81%
Container - 11000	3.8	5.1	35%
Container - 12000	2.6	4.0	51%
Container - 13000	2.9	5.6	91%
Container - 14000	3.7	6.1	66%
Container - 15000	5.9	4.2	-29%
Container - 16000	2.5	7.1	188%
Container - 17000	0.0	5.2	100%
Container - 19000	0.0	1.8	100%
Container - 23000	0.0	2.4	100%

[23] *www.pmsaship.com/wp-content/uploads/2021/11/Container-Vessel-Queuing-Release-FINAL.pdf*

Containerships account for approximately 57% of the calls in 2021. Table 9.10 compares the average days at berth for containerships for 2020 and 2021. The larger containerships spent more time at berth in 2021 than in 2020. The time at berth for 4,000 and 8,000 TEU was not as drastic a change as that for anchorage. However, the largest containerships with less vessel calls did see a drastic increase for time spent at berth. For example, the 17,000 TEU containership spent an average of 13 days at berth in 2021 as compared to 7 days in 2020.

Table 9.10: 2021-2020 Containerships Average Days at Berth Comparison

Container Category	2020 Berth Time Avg Days	2021 Berth Time Avg Days	2020-2021 Change
Container - 1000	16.0	1.8	-89%
Container - 2000	3.0	2.3	-23%
Container - 3000	5.0	2.7	-45%
Container - 4000	2.0	4.8	142%
Container - 5000	3.0	3.0	1%
Container - 6000	3.0	4.3	45%
Container - 7000	3.0	9.1	202%
Container - 8000	4.0	5.6	40%
Container - 9000	4.0	5.1	28%
Container - 10000	4.0	6.3	57%
Container - 11000	4.0	6.2	55%
Container - 12000	5.0	7.4	49%
Container - 13000	5.0	8.2	63%
Container - 14000	5.0	7.1	42%
Container - 15000	6.0	8.4	40%
Container - 16000	9.0	9.0	0%
Container - 17000	7.0	13.0	86%
Container - 19000	4.0	13.2	231%
Container - 23000	7.0	11.2	60%

Harbor Craft

The emissions calculation methodology used to estimate harbor craft emissions for the 2021 inventory is similar to previous years, but various factors such as emission factors, useful life, and load factors were updated per CARB's latest methodology. In addition, activity and emissions for ATBs were added to the harbor craft category. ATB emissions are calculated using the 2021 methodology and factors as used for other harbor craft. The emissions calculation methodology and the emission rates are described in Section 3 of the San Pedro

Bay Ports Emissions Inventory Methodology Report Version 3. The emissions were re-estimated for 2020 and 2005 to reflect inclusion of ATBs and the updated CARB factors.

Table 9.11 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 percentages in the "unknown" column represent engines missing model year, horsepower, or both. The Tier 0 engines increased in 2021 due to the ATBs that called in 2021 and which vary from year to year since most are not home berth in San Pedro Bay complex.

Table 9.11: Harbor Craft Engine Distribution Comparison by Tier

Year	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Unknown
2021	10%	5%	30%	39%	2%	13%
2020	2%	9%	36%	37%	1%	16%
2005	16%	28%	3%	0%	0%	53%

DB ID1631

Table 9.12 summarizes the number of harbor craft inventoried for 2021, the previous year, and 2005. Overall, the total vessel counts increased by 1% between 2021 and the previous year and decreased by 22% between 2005 and 2021.

Table 9.12: Harbor Craft Count Comparison

Harbor Vessel Type	2021	2020	2005
Assist tug	17	13	16
ATB	13	13	na
Commercial fishing	95	95	156
Crew boat	21	22	14
Excursion	18	20	24
Ferry	8	8	7
Government	13	11	26
Ocean tug	6	7	7
Tugboat	20	21	21
Work boat	10	9	14
Total	**221**	**219**	**285**

DB ID196

Table 9.13 summarizes the overall harbor craft activity in million kWh by vessel type, which decreased 5% in 2021 as compared to the previous year. Compared to 2005, the harbor craft activity increased by 20% in 2021. Ocean tugs and workboats activity decreased, while activity for other vessel types either increased or remained the same in 2021 compared to 2020.

Table 9.13: Harbor Craft Activity by Vessel Type, million kWh

Vessel Type	2021	2020	2005
Assist Tug	15.5	11.0	13.8
ATB	5.3	5.4	2.8
ATB barge engines	0.7	0.6	0.1
Commercial Fishing	15.1	15.2	14.1
Crew boat	6.5	5.6	1.8
Excursion	4.1	3.6	8.2
Ferry	11.0	8.2	9.3
Government	1.3	1.0	2.0
Ocean Tug	7.5	14.6	2.4
Tugboat	3.9	3.4	6.5
Work boat	3.8	4.3	1.4
Total	**74.9**	**73.0**	**62.2**

Table 9.14 shows the harbor craft energy consumption (kWh) comparison by engine tier for calendar years 2021, 2020, and 2005.

Table 9.14: Harbor Craft Energy Consumption Comparison by Engine Tier, kWh

Engine Tier	2021 % of Total	2020 % of Total	2005 % of Total
Tier 0	12%	5%	52%
Tier 1	6%	16%	46%
Tier 2	42%	39%	2%
Tier 3	35%	39%	0%
Tier 4	6%	1%	0%
Total	**100%**	**100%**	**100%**

Table 9.15 shows the emissions comparisons for calendar years 2021, 2020, and 2005 for harbor craft. In 2021, emissions increased as compared to the previous year, except for a slight decrease in NO_x. An increase in kWh combined with the shift in energy consumptions between Tier 0 and Tier 1 vessels resulted in an increase in PM emissions while the increase in energy consumption for Tier 4 vessels resulted in the slight decrease in NO_x emissions.

Table 9.15: 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
2021	15	15	15	565	0.5	112	29	53,521
2020	14	13	14	571	0.5	111	26	52,325
2005	33	32	33	706	4.1	209	49	49,599
Previous Year (2020-2021)	**11%**	**12%**	**11%**	**-1%**	**2%**	**2%**	**9%**	**2%**
CAAP Progress (2005-2021)	**-54%**	**-54%**	**-54%**	**-20%**	**-88%**	**-46%**	**-41%**	**8%**

DB ID427

Table 9.16 shows the emissions efficiency changes in 2021 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 9.16: 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
2021	0.01	0.01	0.01	0.53	0.000	0.11	0.03	50
2020	0.02	0.01	0.02	0.62	0.001	0.12	0.03	57
2005	0.04	0.04	0.04	0.94	0.005	0.28	0.07	66
Previous Year (2020-2021)	**7%**	**0%**	**7%**	**15%**	**100%**	**13%**	**7%**	**12%**
CAAP Progress (2005-2021)	**68%**	**67%**	**68%**	**44%**	**100%**	**62%**	**58%**	**24%**

Cargo Handling Equipment

The methodology used to estimate CHE emissions for the 2021 inventory did not change from the methodology used in the previous year inventory. The emissions calculation methodology and the emission rates are described in Section 4 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3.

Table 9.17 shows that the number of units of cargo handling equipment increased by 1% in 2021 and the overall energy consumption increased by 12% in 2021 as compared to the previous year. Energy consumption is measured as total kWh, the product of the rated engine size in kW, annual operating hours, and load factors. There was higher usage level to handle the 16% increase in TEU throughput from the previous year.

From 2005 to 2021, equipment count was 8% higher, with a 39% increase in activity level to handle the 43% increase in TEU throughput.

Table 9.17: CHE Count and Activity Comparison

Year	Count	Energy Consumption kWh	TEU	Activity (kWh) per TEU
2021	1,926	240,696,329	10,677,610	23
2020	1,915	214,138,075	9,213,396	23
2005	1,782	173,108,402	7,484,624	23
Previous Year (2020-2021)	**1%**	**12%**	**16%**	**-3%**
CAAP Progress (2005-2021)	**8%**	**39%**	**43%**	**-3%**

Table 9.18 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 were included in the diesel count.

Table 9.18: Count of CHE Equipment Type

Equipment	Electric	LNG	Propane	Gasoline	Diesel	Total
2021						
Forklift	28	0	180	6	100	314
Wharf crane	88	0	0	0	0	88
RTG crane	0	0	0	0	102	102
Straddle carrier	0	0	0	0	110	110
Top handler	2	0	0	0	205	207
Yard tractor	5	22	158	0	737	922
Other	39	0	1	4	139	183
Total	**162**	**22**	**339**	**10**	**1,393**	**1,926**
	8.4%	**1.1%**	**17.6%**	**0.5%**	**72.3%**	
2020						
Forklift	29	0	181	6	105	321
Wharf crane	86	0	0	0	0	86
RTG crane	0	0	0	0	103	103
Straddle carrier	0	0	0	0	67	67
Top handler	2	0	0	0	194	196
Yard tractor	5	22	158	0	781	966
Other	40	0	1	4	131	176
Total	**162**	**22**	**340**	**10**	**1,381**	**1,915**
	8.5%	**1.1%**	**17.8%**	**0.5%**	**72.1%**	
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 9.19 summarizes the number and percentage of diesel-powered CHE with various emission controls by equipment type in 2021, the previous year, and 2005. The emission controls for CHE include:

- Hybrid equipment counts
- On-road engines (CHE equipped with on-road certified engines instead of off-road engines)
- DPF retrofits counts
- ULSD with a maximum sulfur content of 15 ppm
- Renewable diesel (included for the first time in 2021 EI)
- ULSD with a maximum sulfur content of 15 ppm

Several items to note include:

- Since some emission controls can be used in combination with others, the number of units of equipment with controls cannot be added across to come up with the total equipment count (counts of equipment with controls would be greater than the total equipment counts).
- A column for hybrid equipment count was added and straddle carriers were included instead of side picks as there has been an increase in the use of straddle carriers at the Port since 2018.
- In 2021, there was an increase in equipment counts for hybrid straddle carriers. Hybrid equipment consume less fuel and reduces overall equipment emissions as opposed to using conventional diesel equipment.
- With implementation of the Port's CAAP measure for CHE and CARB's CHE regulation, the relative percentage of cargo handling equipment equipped with new on-road engines increased significantly when compared to 2005.
- Compared to the previous year, in 2021 there were less yard tractors with on-road engines as the existing older yard tractors with on-road engines continue to be taken out of service.
- ULSD is used by all diesel equipment since 2006. For 2005, ULSD was used by some diesel equipment, but not all.
- Starting in mid-2021, some terminals began using renewable diesel instead of ULSD for all of their diesel-powered equipment. This resulted in renewable diesel being used by 32% of all diesel equipment for part of the 2021 calendar year. Renewable diesel has a lower carbon intensity than conventional diesel and provides tailpipe GHG emissions reduction.
- 26 emission controls for propane forklifts are not included in Table 9.16 since only strategies for diesel equipment are included.

Table 9.19: 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
2021											
Forklift	0	0	32	92	8	100	0%	0%	32%	92%	8%
RTG crane	16	0	39	75	27	102	16%	0%	38%	74%	26%
Straddle carrier	82	0	0	70	40	110	75%	0%	0%	64%	36%
Top handler	0	0	60	143	62	205	0%	0%	29%	70%	30%
Yard tractor	0	617	4	465	272	737	0%	84%	1%	63%	37%
Sweeper	0	0	1	5	1	6	0%	0%	17%	83%	17%
Other	0	12	37	102	31	133	0%	9%	28%	77%	23%
Total	**98**	**629**	**173**	**952**	**441**	**1,393**	**7%**	**45%**	**12%**	**68%**	**32%**
2020											
Forklift	0	0	35	105	0	105	0%	0%	33%	100%	0%
RTG crane	16	0	24	103	0	103	16%	0%	23%	100%	0%
Straddle carrier	39	0	0	14	0	14	279%	0%	0%	100%	0%
Top handler	0	0	61	194	0	194	0%	0%	31%	100%	0%
Yard tractor	0	664	4	781	0	781	0%	85%	1%	100%	0%
Sweeper	0	0	1	7	0	7	0%	0%	14%	100%	0%
Other	0	12	39	177	0	177	0%	7%	22%	100%	0%
Total	**55**	**676**	**164**	**1,381**	**0**	**1,381**	**4%**	**49%**	**12%**	**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 9.20 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 2021, 2020, 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 2021.

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 3 and Tier 4) replacing the older and higher-emitting equipment (Tier 0, Tier 1, and Tier 2). In 2021, the number of Tier 4f engines continues to increase from the previous year.

Table 9.20: 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
2021	9	9	75	89	164	390	629	28	1,393
2020	10	12	75	94	167	328	676	19	1,381
2005	256	582	360	0	0	0	165	13	1,376
Previous Year	**-10%**	**-25%**	**0%**	**-5%**	**-2%**	**19%**	**-7%**	**47%**	**1%**
CAAP Progress	**-96%**	**-98%**	**-79%**	**NA**	**NA**	**NA**	**281%**	**115%**	**1%**

DB ID878

Table 9.21 shows the distribution of equipment energy consumption (kWh) comparison by engine type.

Table 9.21: Distribution of CHE Energy Consumption by Engine Type, %

Engine Type	Engine Tier	2021 % of Total	2020 % of Total	2005 % of Total
Diesel	Tier 0	0.2%	0.3%	11.0%
Diesel	Tier 1	0.1%	0.3%	39.3%
Diesel	Tier 2	5.1%	5.3%	31.2%
Diesel	Tier 3	6.1%	6.8%	0.0%
Diesel	Tier 4i	15.0%	14.4%	0.0%
Diesel	Tier 4f	29.3%	28.3%	0.0%
Diesel	Onroad engines	37.0%	37.3%	12.0%
Gasoline		0.2%	0.1%	0.3%
Propane		6.8%	6.8%	6.2%
LNG		0.1%	0.6%	0.0%

Table 9.22 shows the cargo handling equipment emissions comparisons for 2021, the previous year, and 2005. Compared to the previous year, emissions were higher due to increased activity as a result of the increased TEU throughput in 2021, the first time to reach over 10 million TEU in a calendar year.

The reductions in 2021 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 38% increase in energy consumption in 2021 as compared to 2005.

Table 9.22: 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
2021	6.5	6.0	5.0	414.2	2.0	779.8	85.5	184,837
2020	5.8	5.4	4.5	365.6	1.8	643.3	66.5	165,961
2005	53.8	49.5	52.8	1,573.3	9.4	822.2	92.3	134,621
Previous Year (2020-2021)	**12%**	**12%**	**11%**	**13%**	**12%**	**21%**	**29%**	**11%**
CAAP Progress (2005-2021)	**-88%**	**-88%**	**-91%**	**-74%**	**-78%**	**-5%**	**-7%**	**37%**

DB ID237

Table 9.23 shows the emissions efficiency changes in 2021 from 2005 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 9.23: CHE Emissions Efficiency Metric Comparison, tons/10,000 TEUs

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2021	0.006	0.006	0.005	0.388	0.002	0.730	0.080	173
2020	0.006	0.006	0.005	0.397	0.002	0.698	0.072	180
2005	0.072	0.066	0.071	2.102	0.013	1.099	0.123	180
Previous Year (2020-2021)	**4%**	**4%**	**4%**	**2%**	**0%**	**-5%**	**-11%**	**4%**
CAAP Progress (2005-2021)	**92%**	**91%**	**93%**	**82%**	**85%**	**34%**	**35%**	**4%**

Locomotives

The methodology used to estimate locomotive emissions in this 2021 inventory 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 3.

Table 9.24 shows the throughput comparisons for locomotives for 2021, the previous year, and 2005.

Table 9.24: Throughput Comparison, million TEUs

Throughput	2005	2020	2021
Total	7.48	9.21	10.68
On-dock lifts	1.02	1.17	1.27
On-dock TEUs	1.84	2.11	2.28
% On-Dock	25%	23%	21%

Table 9.25 shows the locomotive emission estimates for calendar years 2021, 2020, and 2005.

Table 9.25: 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 tonnes
2021	27	25	27	751	0.7	187	42	65,216
2020	29	27	29	786	0.7	189	45	65,987
2005	57	53	57	1,712	98.0	237	89	82,201
Previous Year (2020-2021)	**-8%**	**-8%**	**-8%**	**-4%**	**-1%**	**-1%**	**-6%**	**-1%**
CAAP Progress (2005-2021)	**-53%**	**-53%**	**-53%**	**-56%**	**-99%**	**-21%**	**-53%**	**-21%**

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 2020 to 2021 were due primarily to decreases in the line haul fleet composite emission factors resulting from line haul fleet mix improvement. These decreases offset the increase in the number of containers moved by on-dock rail (on-dock lifts). Also contributing was a decrease in the throughput of the Intermodal Container Transfer Facility (ICTF).

Table 9.26 shows the emissions efficiency changes in 2021 from the previous year and from 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 (2021 vs. 2005) and previous year (2021 vs. 2020), emissions efficiencies have improved for all pollutants.

Table 9.26: 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
2021	0.21	0.20	0.21	5.92	0.01	1.48	0.33	514
2020	0.25	0.23	0.25	6.72	0.01	1.62	0.38	564
2005	0.56	0.52	0.56	16.75	0.96	2.32	0.87	804
Previous Year (2020-2021)	**16%**	**16%**	**16%**	**12%**	**0%**	**9%**	**13%**	**9%**
CAAP Progress (2005-2021)	**62%**	**62%**	**62%**	**65%**	**99%**	**36%**	**62%**	**36%**

Heavy-Duty Vehicles

The methodology used to estimate HDV emissions in this 2021 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 2021 estimates. Improvements in data processing (that do not constitute a change in methodology) resulted in minor changes to the 2020 emissions compared to the 2020 emissions as reported. The emissions calculation methodology and the emission rates are described in Section 6 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 3.

Table 9.27 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. Turn times were likely also lengthened by congestion seen at the Port resulting from supply chain disruptions. Total idling increased 56% as compared to the previous year and has almost doubled (94%) since 2005. The increase in idling since 2005 may be due in part to the 43% increase in TEU throughput, which resulted in more truck trips. Both the increase since 2005 and the recent increase since 2020 are partly due 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 9.27: HDV Idling Time Comparison, hours

EI Year	Total Idling Time (hours)
2021	5,847,109
2020	3,755,027
2005	3,017,252
Previous Year (2020-2021)	**56%**
CAAP Progress (2005-2021)	**94%**

Table 9.28 summarizes the average age of the truck fleet in 2021, the previous year, and 2005. The average age of the trucks visiting the Port was 7 years in 2021, same as 2020.

Table 9.28: HDV Fleet Weighted Average Age, years

Year	Average Age (years)
2021	7
2020	7
2005	11

Table 9.29 summarizes the HDV emissions for 2021, the previous year, 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. Changes between 2020 and 2021 are primarily the net result of two factors. Fleet turnover resulted in a higher percentage of newer trucks making more of the container moves, which lowered the fleet composite emission factors, especially of PM and NO_x. These reductions were offset by increased port throughput, number of truck trips, and number of VMT to limit the beneficial effect of the improved truck fleet.

Table 9.29: 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
2021	245,454,587	6.0	5.8	6.0	1,042	4.2	356	52	444,814
2020	227,293,976	6.0	5.8	6.0	1,071	3.8	274	41	401,199
2005	266,434,761	248	238	248	6,307	45	1,865	368	474,877
Previous Year (2020-2021)	**8%**	**0%**	**0%**	**0%**	**-3%**	**10%**	**30%**	**27%**	**11%**
CAAP Progress (2005-2021)	**-8%**	**-98%**	**-98%**	**-98%**	**-83%**	**-91%**	**-81%**	**-86%**	**-6%**

As an overall measure of the changes in HDV emissions independent of fluctuations in throughput, Table 9.30 illustrates the changes in emissions in average grams per mile (g/mi) between 2005 and 2021 and between 2020 and 2021. 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 2021, 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 9.30: HDV Fleet Average Emissions, g/mile

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2021	0.0223	0.0214	0.0222	3.851	0.0156	1.3149	0.1935	1,812
2020	0.0237	0.0227	0.0236	4.401	0.0156	1.1637	0.1771	1,800
2005	0.8457	0.8091	0.8457	21.476	0.1529	6.3487	1.2536	1,782
Previous Year (2020-2021)	**-6%**	**-6%**	**-6%**	**-12%**	**0%**	**13%**	**9%**	**1%**
CAAP Progress (2005-2021)	**-97%**	**-97%**	**-97%**	**-82%**	**-90%**	**-79%**	**-85%**	**2%**

Figure 9.5 illustrates the HDV model year distribution for calendar years 2019 to 2021. It shows model year 2009 trucks remain dominant but continue to decline in number. It also shows the elevated percentages of newer, 2010+ trucks.

Figure 9.5: HDV Model Year Distribution

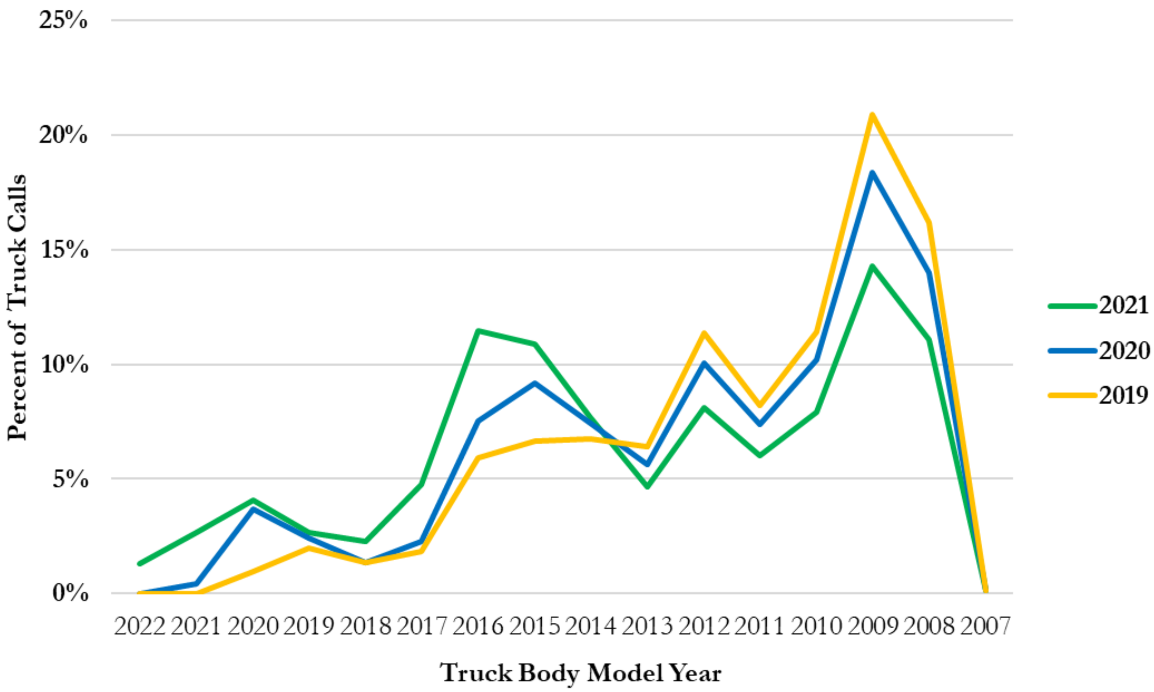


Table 9.31 shows the emissions efficiency changes for HDVs. A positive percentage for the emissions efficiency comparison means an improvement in efficiency. HDV emissions efficiency has improved for most pollutants. Emissions of CO and HC are not strongly affected by new-model standards that reduce 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 9.31: HDV Emissions Efficiency Metrics Comparison, tons/10,000 TEUs

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2021	0.0057	0.0054	0.0056	0.976	0.004	0.33	0.05	416
2020	0.0066	0.0063	0.0065	1.163	0.004	0.30	0.04	435
2005	0.3318	0.3175	0.3318	8.427	0.060	2.49	0.49	634
Previous Year (2020-2021)	**14%**	**14%**	**14%**	**16%**	**0%**	**-10%**	**-25%**	**4%**
CAAP Progress (2005-2021)	**98%**	**98%**	**98%**	**88%**	**93%**	**87%**	**90%**	**34%**

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 in 2021 for DPM and SO_x. The 2023 emission reduction standard was not met for NO_x due to the supply chain congestion and increased OGV emissions at berth and at anchorage. Table 9.32 is a summary of DPM, NO_x, and SO_x percent reductions as compared to the 2023 emission reduction standards.

Table 9.32: Reductions as Compared to 2023 Emission Reduction Standard

Pollutant	2021 Actual Reductions	2023 Emission Reduction Standard
DPM	-84%	77%
NO_x	-44%	59%
SO_x	-95%	93%

Tables 9.33 through 9.35 show the standardized estimates of DPM, NO_x, and SO_x emissions by source category for calendar years 2021, the previous year, and 2005 using current year methodology. The tables also present the percent reduction of emissions from 2005 levels.

Table 9.33: DPM Emissions Comparison by Source Category, tons

Category	2005	2020	2021
Ocean-going vessels	449	34	83
Harbor Craft	33	14	15
Cargo handling equipment	53	4	5
Locomotives	57	29	27
Heavy-duty vehicles	248	6	6
Total	**840**	**87**	**136**
Emission Reduction, %		**-90%**	**-84%**

The tables present the percent reduction of emissions from 2005 levels for 2020 and 2021. For NO_x emissions, there was a 44% reduction from baseline 2005 in 2021, while the emission reductions were 63% from 2005 in 2020. This example shows that there were less emission reductions in 2021 than there were in 2020 when comparing to 2005.

Table 9.34: NO_x Emissions Comparison by Source Category, tons

Category	2005	2020	2021
Ocean-going vessels	5,160	2,879	5,956
Harbor Craft	706	571	565
Cargo handling equipment	1,573	366	414
Locomotives	1,712	786	751
Heavy-duty vehicles	6,307	1,071	1,042
Total	**15,459**	**5,672**	**8,729**
Emission Reduction, %		**-63%**	**-44%**

Table 9.35: SO_x Emissions Comparison by Source Category, tons

Category	2005	2020	2021
Ocean-going vessels	4,683	97	248
Harbor Craft	4	0	1
Cargo handling equipment	9	2	2
Locomotives	98	1	1
Heavy-duty vehicles	45	4	4
Total	**4,839**	**104**	**255**
Emission Reduction, %		**-98%**	**-95%**

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	RD80/BD20	RD99
Automatic Stacking Crane	Kalmar	ASC 4+	Electric				0	2418	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	591	CHE Diesel					
Bulldozer	Caterpillar	D6R	Diesel	Caterpillar	C9	2007	200	137	CHE Diesel		5/15/2011			
Bulldozer	Caterpillar	D6R	Diesel	Caterpillar	C9	2007	200	249	CHE Diesel		5/7/2015			
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35	2056	CHE Diesel		1/1/2014		6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35	1139	CHE Diesel		1/1/2014		6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35	287	CHE Diesel		1/1/2014		6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2010	35	1753	CHE Diesel		1/1/2014		6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2014	35	883	CHE Diesel				6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2014	35	159	CHE Diesel				6/1/2021	
Cone Vehicle	Motrec	RR662SD	Diesel			2014	35	1498	CHE Diesel				6/1/2021	
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	9	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	69	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	178	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	21	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	46	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	1	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	6	CHE Diesel					4/1/2021
Cone Vehicle	Motrec	RR-662	Diesel	Kubota Corp	V1505-ET04	2015	35	6	CHE Diesel					4/1/2021
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25		CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25		CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25		CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25		CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25	690	CHE Diesel					
Cone Vehicle	MEC	IBZ	Diesel	Kubota	D1105E	2013	25		CHE Diesel					
Crane	Paceco		Electric				0	951	CHE Electric					
Crane	Paceco		Electric				0	1045	CHE Electric					
Crane	Paceco		Electric				0	929	CHE Electric					
Crane	P&H	Omega 35T	Diesel	Detroit Diesel	6V53	1987	244	25	CHE Diesel					
Crane	P&H 75T	75T	Diesel	Detroit Diesel	75T	1987	244	437	CHE Diesel					
Crane	Grove	RT855B	Diesel	Caterpillar	3116	1995	205	658	CHE Diesel					
Crane	Liebherr	LHM550	Diesel	Liebherr	D9512A7-04	2014	751	1131	CHE Diesel					
Crane	Terex	RT550	Diesel	Cummins	6bta5.9	2003	174	196	CHE Diesel					
Crane	Terex	RT230	Diesel	Cummins	6BT5.9	2004	130	259	CHE Diesel					
Crane	Terex	RT230-2	Diesel	Cummins	6BT5.9	2014	130	156	CHE Diesel					
Electric wharf crane	Noell		Electric				0	1411	CHE Electric					
Electric wharf crane	Noell		Electric				0	3432	CHE Electric					
Electric wharf crane	Noell		Electric				0	3772	CHE Electric					
Electric wharf crane	Noell		Electric				0	3635	CHE Electric					
Electric wharf crane	Noell		Electric				0	2772	CHE Electric					
Electric wharf crane	Noell		Electric				0	240	CHE Electric					
Electric wharf crane	Noell		Electric				0	671	CHE Electric					
Electric wharf crane	Noell		Electric				0	2013	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	4360	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	4580	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	4236	CHE Electric					
Electric wharf crane	ZPMC	J481A	Electric				0	3726	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000148	Electric				0	4876	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000149	Electric				0	5044	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000150	Electric				0	4909	CHE Electric					
Electric wharf crane	ZPMC	ZP-10020000151	Electric				0	4848	CHE Electric					
Electric wharf crane	Mitsui/Paceco		Electric				0	3401	CHE Electric					
Electric wharf crane	Mitsui/Paceco		Electric				0	2832	CHE Electric					
Electric wharf crane	Mitsubishi	60T	Electric				0	1026	CHE Electric					
Electric wharf crane	Mitsubishi	60T	Electric				0	1251	CHE Electric					
Electric wharf crane	Mitsubishi	50T	Electric				0	1980	CHE Electric					
Electric wharf crane	Mitsubishi	50T	Electric				0	3269	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	2423	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	2569	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	2756	CHE Electric					
Electric wharf crane	Mitsui/Paceco	70T	Electric				0	2308	CHE Electric					
Electric wharf crane	Mitsubishi	60T	Electric				0	238	CHE Electric					
Electric wharf crane	Paceco		Electric				0	341	CHE Electric					
Electric wharf crane	Paceco		Electric				0	558	CHE Electric					
Electric wharf crane	Paceco		Electric				0	2110	CHE Electric					
Electric wharf crane	Paceco		Electric				0	398	CHE Electric					
Electric wharf crane	Paceco		Electric				0	2577	CHE Electric					
Electric wharf crane	Paceco		Electric				0	2718	CHE Electric					
Electric wharf crane	Paceco		Electric				0	1431	CHE Electric					
Electric wharf crane	Paceco		Electric				0	2717	CHE Electric					
Electric wharf crane	Paceco		Electric				0	3479	CHE Electric					
Electric wharf crane	Paceco		Electric				0	1941	CHE Electric					
Electric wharf crane			Electric				0	97	CHE Electric					
Electric wharf crane			Electric				0	980	CHE Electric					
Electric wharf crane			Electric				0	1,531	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	RD80/BD20	RD99
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	61	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	248	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	351	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	386	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	266	CHE Electric					
Electric wharf crane	Noell		Electric				0	3850	CHE Electric					
Electric wharf crane	Noell		Electric				0	3715	CHE Electric					
Electric wharf crane	Noell		Electric				0	2162	CHE Electric					
Electric wharf crane	Noell		Electric				0	3786	CHE Electric					
Electric wharf crane	Noell		Electric				0	3606	CHE Electric					
Electric wharf crane	Noell		Electric				0	3478	CHE Electric					
Electric wharf crane	Noell		Electric				0	3091	CHE Electric					
Electric wharf crane	Noell		Electric				0	3499	CHE Electric					
Electric wharf crane	Noell		Electric				0	3359	CHE Electric					
Electric wharf crane	Noell		Electric				0	3323	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	3012	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2803	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	2021	CHE Electric					
Electric wharf crane	ZPMC		Electric				0	743.5	CHE Electric					
Electric wharf crane	MITSUBISHI	7820-7	Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC	J111A00-8	Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC	J111A00-9	Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-10	Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-11	Electric				0	0	CHE Electric					
Electric wharf crane	ZPMC	ZP-2073-12	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					
Forklift	Nissan	PL50LP	LPG			2007	122	205	CHE Propane					
Forklift	Toyta		LPG					445	CHE Propane					
Forklift	Toyta		LPG					22	CHE Propane					
Forklift	Daewoo	G355-2	LPG	GM	Vortec	2000	85	267	CHE Propane					
Forklift	Clark	GCS20MB	LPG	Mitsubishi	4G52	1988	49	44	CHE Propane					
Forklift	Clark	GCS 20	LPG	Mitsubishi	4G52	1988	49	67	CHE Propane					
Forklift	Taylor	TE800L	Diesel	Cummins		2018	330	276	CHE Diesel				6/1/2021	
Forklift	Komatsu	FG40ZT-8	LPG	Nissan	TB45L	2007	86	265	CHE Propane					
Forklift	Komatsu	FG40ZT-8	LPG	Nissan	TB45L	2007	86	335	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	1245	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	501	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	371	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	466	CHE Propane					
Forklift	Nissan	PF80YLP	LPG	Nissan	TB45	2010	95	696	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	233	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	365	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	986	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	180	CHE Propane					
Forklift	Clark	C40L	LPG	GM	4.3L	2012	120	975	CHE Propane					
Forklift	Toyota	8FGUS25-147V	LPG	Toyota	:2403050	2012	51	85	CHE Propane					
Forklift	Toyota	8FGUS25-147V	LPG	Toyota	:2403050	2012	51	54	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	81	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	586	CHE Propane					
Forklift	Mitsubishi	FG45N-LE	LPG	Nissan	TB45	2013	95	677	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	225	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	296	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	120	CHE Propane					
Forklift	Hyster	H90FT	LPG	GM	4.3L	2014	100	306	CHE Propane					
Forklift	Toyota	8FGU25	LPG	Toyota	204Y	2014	51	381	CHE Propane					
Forklift	Toyota	8FGU25	LPG	Toyota	204Y	2014	51	221	CHE Propane					
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2016	164	199	CHE Diesel		12/30/2013		6/1/2021	
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2016	164	145	CHE Diesel		12/30/2013		6/1/2021	
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	1840	CHE Diesel				6/1/2021	
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	2247	CHE Diesel				6/1/2021	
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	513	CHE Diesel				6/1/2021	
Forklift	Hyster	P360	Diesel	Cummins	QSB6.7	2018	164	445	CHE Diesel				6/1/2021	
Forklift	Kalmar	15T	Diesel	Cummins	QSB 6.7	2007	220	109	CHE Diesel		5/4/2012			
Forklift	Kalmar	15T	Diesel	Cummins	QSB 6.7	2007	220	65	CHE Diesel					
Forklift	Kalmar	15T	Diesel	Cummins	QSB 6.7	2007	220	54	CHE Diesel					
Forklift	Capacity	TJ7000	Diesel	Cummins	QSC8.3L	2007	230	94	CHE Diesel		1/1/2009			
Forklift	Nissan	60	LPG	Nissan	K25L	2007		324	CHE Propane					
Forklift	Nissan	60	LPG	Nissan	K25L	2007		159	CHE Propane					
Forklift	Nissan		LPG	Nissan		2007		497	CHE Propane					
Forklift	Capacity	TJ7000	Diesel	Cummins	QSB6.7	2008	220	75	CHE Diesel		3/1/2010			
Forklift	Capacity	TJ7000	Diesel	Cummins	QSB6.7	2008	220	95	CHE Diesel		3/1/2010			
Forklift	Toyota		Gasoline			2010		494	CHE Gasoline					
Forklift	Toyota		Gasoline			2011		127	CHE Gasoline					
Forklift	Toyota		Gasoline			2011		158	CHE Gasoline					
Forklift	Mitsubishi		Gasoline	Nissan		2012		414	CHE Gasoline					
Forklift	CAT		LPG	Nissan	K25L	2008		265	CHE Propane					
Forklift	CAT		LPG	Nissan	K25L	2008		325	CHE Propane					
Forklift	CAT		LPG	Nissan	K25L	2008		133	CHE Propane					
Forklift			Diesel			2012		281	CHE Diesel					
Forklift			Diesel	Cummins		2015		953	CHE Diesel					
Forklift			Diesel	Cummins		2015		135	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	RD80/BD20	RD99
Forklift			Diesel	Cummins		2015		1851	CHE Diesel					
Forklift	Hyundai		Diesel	Cummins		2017		89	CHE Diesel					
Forklift	Taylor		Diesel			2019		391	CHE Diesel					
Forklift	Taylor		Diesel			2019		663	CHE Diesel					
Forklift			Diesel			2020		176	CHE Diesel					
Forklift			Diesel			2017		305	CHE Diesel					
Forklift			Diesel			2016		24	CHE Diesel					
Forklift			Diesel			2017		62	CHE Diesel					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	562	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	384	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	609	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	918	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	251	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	1174	CHE Propane					
Forklift	Toyota	8FGU32	LPG	Toyota	4Y	2017	42	710	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	32	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	342	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	46	203	CHE Propane					
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	20	CHE Diesel		1/21/2015			
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	1	CHE Diesel		1/23/2015			
Forklift	Kalmar	DCE-150-6	Diesel	Cummins	QSB6.7	2008	173	3	CHE Diesel		3/12/2015			
Forklift	Kalmar	DCE160-12	Electric					0	CHE Electric					
Forklift	Kalmar	DCE160-12	Electric					0	CHE Electric					
Forklift	Kalmar	DCE160-12	Electric					0	CHE Electric					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	444	CHE Diesel		7/17/2015			
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	881	CHE Diesel		7/21/2015			
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	320	CHE Diesel		7/23/2015			
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2011	160	257	CHE Diesel		7/24/2015			
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	238	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	549	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	308	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	384	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	563	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	579	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2013	173	0	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	1,004	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	1,007	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	893	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	307	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	1,086	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	607	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	1,148	CHE Diesel					
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2014	173	457	CHE Diesel					
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2017	173	318	CHE Diesel					
Forklift	Taylor	XH350L	Diesel	Cummins	QSB6.7	2017	173	386	CHE Diesel					
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	232	CHE Diesel		7/1/2016			
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	219	CHE Diesel		7/1/2016			
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	295	CHE Diesel		7/1/2016			
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	324	CHE Diesel		6/27/2017			
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2012	220	258	CHE Diesel		6/17/2016			
Forklift	Kalmar	DCD250	Diesel	Cummins	QSB6.7	2008	260	127	CHE Diesel		2/5/2016			
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	573	CHE Diesel					
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	559	CHE Diesel					
Forklift	Taylor	TX1700L	Diesel	Cummins	QSL-9	2013	230	546	CHE Diesel					
Forklift	Kalmar	DCD370-12	Diesel	Volvo	TAD1170VE	2014	319	151	CHE Diesel					
Forklift	Kalmar	DCD370-12	Diesel	Cummins	QSM11	2004	330	0	CHE Diesel					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	378	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	264	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	121	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	388	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	570	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	533	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	694	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	510	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	667	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	571	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	0	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	711	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	607	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	570	CHE Propane					
Forklift	Clark	C55S	LPG	GM	V6 4.3	2013	93	91	CHE Propane					
Forklift	Kalmar	DCF500-12	Diesel	Cummins	QSM11	2008	350	511	CHE Diesel		4/8/2016			
Forklift	Kalmar	DCF500-12	Diesel	Volvo	TAD1360VE	2013	348	733	CHE Diesel					
Forklift	Taylor	X1000RC	Diesel	Volvo	TAD1371VE	2014	388	432	CHE Diesel					
Forklift	Taylor	X1000RC	Diesel	Volvo	TAD1371VE	2014	388	405	CHE Diesel					
Forklift	Clark	C75L	LPG	GM	V6 4.3	2013	93	113	CHE Propane					
Forklift	Clark	C75L	LPG	GM	V6 4.3	2013	93	161	CHE Propane					
Forklift	Kalmar	DCE90-6L	Diesel	Perkins	S6S	2004	114	81	CHE Diesel		7/31/2014			
Forklift	Hyster	H100XM	LPG	GMC	3.6	2002	165	0	CHE Propane					
Forklift	Hyster	H80XL	LPG	GMC	3.6	1995	165	23	CHE Propane					
Forklift	Hyster	H50FT	Diesel	YANMAR	3.3L	2014	165	178	CHE Diesel					
Forklift	Hyster	H50FT	LPG	PSI	2.2	2014	59	411	CHE Propane					
Forklift	Hyster	H50FT	LPG	PSI	2.2	2015	59	218	CHE Propane					
Forklift	Yale	GLP100MJNB	LPG	GMC	3.6	2005	160	0	CHE Propane					
Forklift	Yale	GLP100MJNB	LPG	GMC	3.6	2005	160	441	CHE Propane					
Forklift	Yale	GLP100MJNB	LPG	GMC	3.6	2005	160	148	CHE Propane					
Forklift	Yale	GLP100	LPG			2008	160	359	CHE Propane					
Forklift	Yale	GLP100	LPG			2008	160	36	CHE Propane					
Forklift	Hyster	H100FT	LPG			2011		355	CHE Propane					
Forklift	Taylor	TX360L	Diesel	Cummins	5.9	2007	137	643	CHE Diesel		5/13/2013			
Forklift	Taylor	TX360L	Diesel	Cummins	5.9	2007	137	73	CHE Diesel		3/12/2014			
Forklift	Yale	GDP360EBECCV1	Diesel			2009		187	CHE Diesel		8/13/2013			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2004	190	1982	CHE Diesel		1/15/2014			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2004	152	957	CHE Diesel		8/18/2014			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2005	152	1209	CHE Diesel		2/21/2013			
Forklift	Taylor	TH350L	Diesel	Cummins	5.9	2005	152	1868	CHE Diesel		8/14/2014			
Forklift	Nissan	FO4G40V-LP	LPG			2002	122	0	CHE Propane					
Forklift	Nissan	PL50LP	LPG			2007	122	113	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	205	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	286	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	293	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	214	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	297	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	RD80/BD20	RD99
Forklift	Nissan	JP80BYLP	LPG			2007	122	288	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	0	CHE Propane					
Forklift	Nissan	JP80BYLP	LPG			2007	122	500	CHE Propane					
Forklift	Taylor	TE650	Diesel	Volvo	TAD870VE	2015	210	77	CHE Diesel		1/1/2012			
Forklift	Taylor	T-360L	Diesel	Taylor	T360L	2007	260	770	CHE Diesel		1/1/2012			
Forklift	Hoist	P36	Diesel	Hyster	P360	2007	160	155	CHE Diesel		1/1/2012			
Forklift	Kone	SMV16-600B	Diesel	Kone	SMV 16-1600B	2011	248	1203	CHE Diesel					
Forklift	Kone	SMV16-600B	Diesel	Kone	SMV 16-1600B	2011	248	1333	CHE Diesel					
Forklift	Hyster	H250HD2	Diesel	Hyster	H250HD2	2015		915	CHE Diesel					
Forklift	Hyster	H250HD2	Diesel	Hyster	H250HD2	2015		1056	CHE Diesel					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		0	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		0	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		0	CHE Propane					
Forklift	Clark	C40L	LPG	PSI	PSI-4.3	2020		0	CHE Propane					
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	Yale	GDP360EF	Diesel	Cummins	QSB6.7	2020	164	467	CHE Diesel					
Forklift	Yale	GLP050MXNEAE0	LPG	PSI	2.4L	2019	62	470	CHE Propane					
Forklift	Yale	GLP050MXNEAE0	LPG	PSI	2.4L	2019	62	1061	CHE Propane					
Forklift	Nissan	CF01A15V	Gasoline				45	396	CHE Gasoline					
Forklift	Nissan	CPH01A15V	Gasoline				45	55	CHE Gasoline					
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	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	376	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	232	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2010	51	204	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	282	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	190	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	259	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	197	CHE Propane					
Forklift	Hyster	H50FT	LPG	GM	Vortex 4.3L	2011		315	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	148	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	159	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	199	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	182	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2012	51	194	CHE Propane					
Forklift	Yale	GLP-100	LPG	GM	VORTEX 4.3L	2007		107	CHE Propane					
Forklift	Hyster	H50FT	LPG	Mazda	2.2L	2011	51	23	CHE Propane					
Forklift	Raymond Pacer	R30-C30TT	Electric				0	0	CHE Electric					
Forklift	Caterpillar	V80F	LPG	Perkins		1989	65	934	CHE Propane					
Forklift	Caterpillar	DP150	Diesel	Deutz	TCD2012L042V	2010	131	15	CHE Diesel					
Forklift	Caterpillar	P33000-D	Diesel	Mitsubishi	6M60	2007	148	465	CHE Diesel					
Forklift	Caterpillar	PD10000	Diesel	Mitsubishi	SS-DP	2011	75	673	CHE Diesel					
Forklift	Caterpillar	DP50CN1-D	Diesel	Caterpillar	3914/2200	2013	75	395	CHE Diesel					
Forklift	Hyster	H80XL	LPG	GM		2007	100	129	CHE Propane					
Forklift	Hyster	H300XL	Diesel	Perkins		1993	175	11	CHE Diesel		4/5/2011			
Forklift	Linde	H35D	Diesel	Volkswagon	BAEU	2007	59	635	CHE Diesel					
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O	1994	46	250	CHE Propane			2012		
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
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	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			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1991	85	250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB42	1994	85	250	CHE Propane			2013		
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	FG15HT-17	LPG	Nissan	K21L	2006	50	250	CHE Propane					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Komatsu	FG30G-11	LPG	Nissan		1991		250	CHE Propane			2013		
Forklift	Komatsu	FG30G-11	LPG	Nissan		1991		250	CHE Propane			2013		
Forklift	Komatsu	FG30G-11	LPG	Nissan		1994		250	CHE Propane			2013		
Forklift	Komatsu	FG45T-6	LPG	Nissan	TB45L	2005	96	250	CHE Propane					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	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	RD80/BD20	RD99
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	EP16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16KT	Electric					250	CHE Electric					
Forklift	Mitsubishi	FB16NT	Electric					250	CHE Electric					
Forklift	Clark	CT-50	LPG	Ford				250	CHE Propane			2013		
Forklift	Komatsu	FG15HT-15	LPG	Nissan	H2O			250	CHE Propane			2013		
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	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	YALE		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift	HYSTER		LPG					500	CHE Propane					
Forklift			LPG			2015	125	2179	CHE Propane					
Forklift	Mitsubishi	FG40N	LPG	Nissan	TB45L	2011	76	1174	CHE Propane					
Forklift	Hyster	H300HD	Diesel	Cummins	QSB6.7	2013	129	670	CHE Diesel					
Forklift	Sany	SCO160H4	Diesel	Cummins	ISB6.7	2019	225	444	CHE Diesel					
Forklift	Toyota	7FU45	LPG	GM	4.3 Vortec	2008	200	1200	CHE Propane					
Forklift	Yale	GLP050VXESV	LPG	Mazda	F2-Z25D	2006	51	585	CHE Propane					
Forklift	Yale	GLP050VXESV	LPG	Mazda	F2-Z25D	2006	51	459	CHE Propane					
Forklift	Heyster	H50FT	LPG	IMPCO		2010	46	691	CHE Propane					
Forklift	Taylor	XH-350L	Diesel	Cummins	QSB 6.7-C173 Tie	2021	173	22	CHE Diesel					
Forklift	Clark	S25L	LPG		2.5L	2021		21	CHE Propane					
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1799	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1787	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1844	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1933	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1751	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1556	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1703	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1948	CHE Diesel				6/1/2021	
Hybrid RTG	Paceco-Mitsui		Diesel	Caterpillar	C7	2018	249	1894	CHE Diesel				6/1/2021	
Hybrid RTG	ZPMC	RTG	Diesel			2011	197	3386	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	5493	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	5284	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	645	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	5000	CHE Diesel					
Hybrid RTG	Paceco	RTG	Diesel	Caterpillar	C7.1 ACERT	2015	302	4460	CHE Diesel					
Hybrid RTG	Mi Jack	1200 REH	Diesel	John Deere	4045HF485	2009	137	1140	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3629	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3088	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3118	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2323	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3775	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	585	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2855	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3755	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	3488	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2904	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2922	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	HSC350A	Diesel	AGCO	44AWF	2016	102	2036	CHE Diesel					4/1/2021
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2532	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2328	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2416	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2401	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2349	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2780	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2871	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2783	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2756	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2512	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2562	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2632	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2705	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2642	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	1097	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2121	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2558	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2638	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2524	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2646	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2676	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	RD80/BD20	RD99
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2651	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2839	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	1824	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	2662	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3056	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2018	103	3243	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2665	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3674	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3205	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3575	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3161	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2480	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3175	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2865	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2965	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	3247	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2966	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2509	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2224	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1713	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1960	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2814	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2754	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1986	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2159	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2148	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2188	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1946	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	2346	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1069	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1290	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1139	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1409	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1180	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	1058	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	791	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	554	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	411	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	309	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	212	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	261	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	311	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	169	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	276	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	117	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	260	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	309	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	286	CHE Diesel					
Hybrid Straddle Carrier	Kalmar	44AWF.1184	Diesel	Agco Sisu	D49FSR	2019	103	217	CHE Diesel					
Loader	Caterpillar	966G	Diesel	Caterpillar	3176C	2005	259	542	CHE Diesel		9/8/2010			
Loader	Mijack	M115	Diesel	Cummins	QSX11.9	2010	460	0	CHE Diesel					
Loader	Mijack	MJ150	Diesel	Cummins	QSB 6.7	2015	260	706	CHE Diesel					
Loader	Caterpillar	988K	Diesel	Caterpillar	C3.8B	2020	74	844	CHE Diesel					
Loader	Caterpillar	966-D	Diesel	Caterpillar	C-7	2010	300	44	CHE Diesel					
Loader	Caterpillar	966-D	Diesel	Caterpillar	C-7	2010	232	689	CHE Diesel		7/22/2010			
Loader	Caterpillar	966M	Diesel	Caterpillar	C9.3	2020	174	2093	CHE Diesel					
Loader	Caterpillar	980H	Diesel	Caterpillar	C15	2007	318	845	CHE Diesel		5/8/2015			
Loader	Caterpillar	988H	Diesel	Caterpillar	C18	2011	527	3921	CHE Diesel		2/27/2015			
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2013	527	3230	CHE Diesel					
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2013	527	2650	CHE Diesel					
Loader	Caterpillar	988K	Diesel	Caterpillar	C18	2018	527	3325	CHE Diesel					
Loader	Caterpillar	904H	Diesel	Mitsubishi	S4Q2-T	2008	55	0	CHE Diesel					
Loader	Hustler		Electric				0	0	CHE Electric					
Loader	Hustler		Electric				0	0	CHE Electric					
Loader	Case	480	Diesel			2009	110	964	CHE Diesel					
Man Lift	Genie	S-125	Diesel			2003	75	89	CHE Diesel		1/1/2014		6/1/2021	
Man Lift	JLG	660SJ	Gasoline			2007	60	102	CHE Gasoline					
Man Lift	Genie	S-65	Diesel			2007	75	135	CHE Diesel		1/1/2014		6/1/2021	
Man Lift	JLG		Diesel	Deutz	BF4M2011	2004	87	36	CHE Diesel		9/1/2010			
Man Lift	JLG	G6-42A	Diesel	Cummins	QSF3.8	2015	110	121	CHE Diesel					
Man Lift	JLG		Diesel	Deutz	BF4M2011	2006	87	230	CHE Diesel		9/1/2010			
Man Lift	Skyjack	SJIH 4740	Electric				0	0	CHE Electric					
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		Electric				0	0	CHE Electric					
Man Lift	Skyjack	SJ1256	Diesel	Deutz AG	TCD 3.6 l4	2017	107	39	CHE Diesel					4/1/2021
Man Lift	Terex	TB60	Diesel	Cummins	B3.9-C	2002	73	44	CHE Diesel		8/20/2014			
Man Lift	JLG	1350SJP	Diesel	Deutz	TD2011L04	2012	73	58	CHE Diesel					
Man Lift	JLG	86055	Diesel	Deutz	FRM2011	2002	87	223	CHE Diesel		1/1/2012			
Man Lift	Terex	TB60	Diesel	Cummins	B3.9	2000	80	374	CHE Diesel		1/1/2012			
Man Lift	JLG	86JS	Diesel	Deutz		2007	87	386	CHE Diesel		1/1/2012			
Man Lift	Motrec	RR662	Diesel			2008	87		CHE Diesel		1/1/2012			
Man Lift			Diesel				87		CHE Diesel		1/1/2012			
Man Lift	JLG Lift	GS2646	Electric				0	0	CHE Electric					
Man Lift	JLG Lift	800AJ	Diesel	Deutz	D2011L040	2010	49	0	CHE Diesel					
Man Lift	JLG Lift	800 AJ	Diesel	Perkins	GP65-4N	2009	65	291	CHE Diesel					
Man Lift	JLG Lift	800 AJ	Diesel	Perkins	GP65-4N	2009	65	126	CHE Diesel					
Man Lift	JLG Lift	800 AJ	Diesel	Deutz	TD2011L04	2008	75	461	CHE Diesel					
Man Lift	Skyjack	3291	Electric				0	0	CHE Electric					
Man Lift	Skyjack	3226	Electric				0	0	CHE Electric					
Man Lift	Genie lift	S60	Diesel	Deutz	D2011L031	2007	49	146	CHE Diesel					
Material Handler	Caterpillar	330DL	Diesel	Caterpillar	C9	2007	268	1624	CHE Diesel		4/1/2011			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2008	371	2457	CHE Diesel		2/27/2015			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2007	371	2152	CHE Diesel		3/24/2015			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2007	371	1652	CHE Diesel		9/23/2013			
Material Handler	Caterpillar	345C MH	Diesel	Caterpillar	C13	2008	371	3379	CHE Diesel		2/27/2015			
Material Handler	Caterpillar	345	Diesel	Caterpillar	C13	2005	371	2594	CHE Diesel		5/9/2016			
Material Handler	Caterpillar	375-L	Diesel	Caterpillar	C15	2009	475	598	CHE Diesel		6/1/2012			
Material Handler	Caterpillar	375-L	Diesel	Caterpillar	C15	2009	450	600	CHE Diesel		8/1/2011			
Material Handler	Caterpillar	385C	Diesel	Caterpillar	C18	2008	390	1922	CHE Diesel		3/23/2015			
Material Handler	Caterpillar	385C	Diesel	Caterpillar	C18	2011	390	2282	CHE Diesel		3/20/2015			
Material Handler	Caterpillar	349FL	Diesel	Caterpillar	C13	2018	425	1406	CHE Diesel					
Material Handler	Caterpillar	3260	Diesel	Caterpillar	C13	2020	425	1952	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	RD80/BD20	RD99
Rail Pusher	Rail King	RK320	Diesel	Cummins	QSB6.7	2012	194	2421	CHE Diesel					
Reach Stacker	Kalmar	TD100G	Diesel	Cummins	QSL9 250	2013	250	31	CHE Diesel					4/1/2021
Reach Stacker	CVS Ferrari	TF500-4	Diesel	Cummins	QSG12	2018	449	1197	CHE Diesel					
Rub-trd Gantry Crane	Sumitomo	RTG62 / 22.555 / 4	Diesel	Cummins	QSX15G	2014	750	123	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Sumitomo	RTG62 / 22.555 / 4	Diesel	Cummins	QSX15G	2014	750	375	CHE Diesel		1/1/2016		6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	658	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	697	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	226	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	271	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1601	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	1997	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	3456	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell	RTG62 / 22.555 / 4	Diesel	Cummins	KTA 19-G2	2013	600	2577	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	QSX15G	2014	750	2500	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	2362	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	3380	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	2166	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Noell		Diesel	Caterpillar	C15	2015	624	2737	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1108	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1168	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Paceco-Mitsui		Diesel	Cummins	C15X	2020	750	1233	CHE Diesel				6/1/2021	
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2392	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2013	627	2268	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2013	627	2579	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2011	410	2819	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2523	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2011	410	2438	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2364	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2150	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2916	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2944	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4F	2020	410	2046	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	2997	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	3061	CHE Diesel					
Rub-trd Gantry Crane	Mitsui/Paceco	RT-4020-8-I-5	Diesel	Cummins	QSX15 Tier 4i	2012	550	3223	CHE Diesel					
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	4168	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	4054	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2289	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	4611	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	2873	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3919	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3934	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Caterpillar	3456	2003	612	3481	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Paceco	RTG	Diesel	Deutz	8M1015C	2004	454	2464	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Paceco	RTG	Diesel	Deutz	8M1015C	2004	454	2797	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	0	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	3601	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	3379	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	3983	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	ZPMC	RTG	Diesel	Cummins	QSX15-G7	2005	685	3793	CHE Diesel	12/1/2012				
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2002	680	310	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2557	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2488	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2731	CHE Diesel		1/23/2013			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	2556	CHE Diesel		1/31/2013			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	3189	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2713	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	2562	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2845	CHE Diesel		10/1/2014			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2865	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	3085	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2374	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2125	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2006	680	2080	CHE Diesel		2/26/2013			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2005	680	2471	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	3078	CHE Diesel		2/13/2013			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX X 15 T4f	2019	680	2001	CHE Diesel		10/1/2014			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	3311	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	3218	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2818	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2876	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Kone	D1703	Diesel	Cummins	QSX 15-G7	2004	680	2982	CHE Diesel		1/1/2020			
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	3174	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	3256	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	3034	CHE Diesel					
Rub-trd Gantry Crane	ZMPC	RC40.6/56	Diesel	Caterpillar	3456ATAAC	2005	612	1198	CHE Diesel		1/1/2015			
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2600	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2992	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2628	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2820	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2687	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2843	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	2901	CHE Diesel					
Rub-trd Gantry Crane	Mitsui-Paceco	RT4023-8-1	Diesel	Caterpillar	C-15	2013	779	3066	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1000RC	Diesel	Detroit	DDEC	2011	320	49	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	2237	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Detroit	DDEC	2011	320	2090	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	1182	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9	2011	320	1947	CHE Diesel					
Rub-trd Gantry Crane	Mi Jack	1200R	Diesel	Cummins	QSL9 333	2015	320	2826	CHE Diesel					
Side pick	Kalmar		Diesel	Cummins	QSL9 275	2017	275	83	CHE Diesel					4/1/2021
Side pick	Fantuzzi	FDC25K7	Diesel	Cummins	QSL9 275	2017	275	796	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	150	CHE Diesel					4/1/2021
Side pick	Terex	FDC25K7	Diesel	Cummins	QSL	2016	275	1580	CHE Diesel					4/1/2021
Side pick	Terex	FDC25K7	Diesel	Cummins	QSL	2016	275	409	CHE Diesel					4/1/2021
Side pick	Taylor	TEC 155H	Diesel	Cummins	5.9L B series	2000	152	118	CHE Diesel		7/11/2014			
Side pick	Taylor	TEC 155H	Diesel	Cummins	5.9L B series	2000	152	262	CHE Diesel		7/11/2014			
Side pick	Taylor	XEC155/6	Diesel	Cummins	QSB6.7	2020	173	227	CHE Diesel					
Side pick	Taylor	XEC155/6	Diesel	Cummins	QSB6.7	2020	173	134	CHE Diesel					
Side pick			Diesel			2015		5	CHE Diesel					
Side pick			Diesel			2015		274	CHE Diesel					
Side pick			Diesel			2015		74	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	RD80/BD20	RD99
Side pick	Fantuzzi	FDC25K5	Diesel	Caterpillar	C 7.1 Tier 4F	2014	250	0	CHE Diesel					
Side pick	Fantuzzi	FDC25K5	Diesel	Cummins	C 7.1 Tier 4F	2014	240	1051	CHE Diesel					
Side pick	Fantuzzi	FDC25K5	Diesel	Caterpillar	C 7.1 Tier 4F	2014	250	0	CHE Diesel					
Side pick			Diesel			2020	250	3721	CHE Diesel					
Side pick			Diesel			2020	250	713	CHE Diesel					
Skid Steer Loader	Caterpillar	252B	Diesel	Mitsubishi	3044C	2007	70	453	CHE Diesel					
Skid Steer Loader	Caterpillar	252B	Diesel	Mitsubishi	3044C	2007	70	567	CHE Diesel					
Skid Steer Loader	Caterpillar	252B	Diesel	Caterpillar	S4S-DTDPB	2012	56	634	CHE Diesel					
Skid Steer Loader	Caterpillar	262DL	Diesel	Caterpillar	C3.8B	2018	73	955	CHE Diesel					
Skid Steer Loader	Bobcat	853	Diesel	bobcat	KUBTA	1994	75	18	CHE Diesel					
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4757	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	4348	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3296	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	6323	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	6321	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5929	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	6173	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5269	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5948	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	6197	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5659	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	6093	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	6252	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5698	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	3069	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5796	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5708	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	6184	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	4934	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	5718	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	Volvo	TAD1172VE	2015	425	869	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5813	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5742	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	3074	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5035	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5889	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	6073	CHE Diesel					4/1/2021
Straddle Carriers	Kalmar	ESC350WA	Diesel	AGCO	SISU POWER 98/	2013	425	5005	CHE Diesel					4/1/2021
Sweeper	Schwarze		Diesel	John Deere		2019	200	887	CHE Diesel					
Sweeper	Elgin	Crosswind	Diesel		ISB 6.7	2013	200	282	CHE Diesel					4/1/2021
Sweeper	Caterpillar	IT14G	Diesel	Caterpillar	3054 DIT	2000	96	227	CHE Diesel		9/19/2013			
Sweeper	Caterpillar	DL200TC-5	Diesel	Doosan	1204F-E44TAN	2016	173	258	CHE Diesel					
Sweeper	Caterpillar	DL200TC-5	Diesel	Doosan	1204F-E44TAN	2016	173	427	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					
Sweeper	Tymco	500X	Diesel	Isuzu	44K1TC	2018	210	292	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2013	74	124	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2014	74	141	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2014	74	51	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2018	74	317	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2019	74	172	CHE Diesel					
Telehandler	JCB	509-42 F	Diesel	JCB	444TA4I8IL1	2019	74	274	CHE Diesel					
Telehandler	JLG	1055	Diesel	Cummins	QSF3.B	2021	130	532	CHE Diesel					
Top handler	Taylor	TXC-976	Diesel			2015	330	1069	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel			2015	330	0	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2014	335	0	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel			2015	330	2568	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2012	335	3766	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2012	335	2586	CHE Diesel				6/1/2021	
Top handler	Taylor	TXC-976	Diesel	Volvo	TAD1360VE	2012	335	1661	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2067	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2781	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2579	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2534	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2012	335	2590	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1703	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1549	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	2119	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1598	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1468	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	L-TAD1360VE	2014	350	2777	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1492	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1838	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1808	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2014	350	1986	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	1880	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	2415	CHE Diesel				6/1/2021	
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2015	350	1930	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	3208	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	3387	CHE Diesel				6/1/2021	
Top handler	Taylor	TXLC-976	Diesel	Volvo	TAD1360VE	2015	335	3259	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4125	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3526	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3948	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4034	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3996	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3830	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4106	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4325	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3943	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4081	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	4499	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3975	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3479	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3807	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3574	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3991	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3848	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3923	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3081	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3366	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	2995	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	RD80/BD20	RD99
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3368	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3862	CHE Diesel				6/1/2021	
Top handler	Taylor	XLC-976	Diesel	Volvo	TAD1371VE	2018	389	3454	CHE Diesel				6/1/2021	
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	235	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	230	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	127	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330		CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	0	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	314	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	7	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	236	CHE Diesel					
Top handler	Fantuzzi	FDS500	Diesel	Cummins	QSM11	2005	330	338	CHE Diesel					
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1853	CHE Diesel		1/1/2010			
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1825	CHE Diesel		2/1/2010			
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1417	CHE Diesel		1/1/2010			
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2062	CHE Diesel		3/1/2010			
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	2900	CHE Diesel		1/1/2012			
Top handler	Taylor	TH976	Diesel	Cummins	QSM11	2008	335	1414	CHE Diesel		3/1/2010			
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360V	2011	348	2627	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360V	2011	348	2409	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2012	343	2840	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2012	343	3117	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2890	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3089	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2943	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2397	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2863	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	2718	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3293	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2013	343	3295	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3036	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3126	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	2420	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	2548	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	2427	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3401	CHE Diesel					
Top handler	Taylor	TXCL976	Diesel	Volvo	TAD1360VE	2015	343	3331	CHE Diesel					
Top handler	Taylor	THDC-975	Diesel	Cummins	QSL	2016	350	116	CHE Diesel					4/1/2021
Top handler	Taylor	FDC550G5	Diesel	Cummins	QSG12	2016	400	380	CHE Diesel					4/1/2021
Top handler			Diesel			2017	350		CHE Diesel					4/1/2021
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins		2016	350	609	CHE Diesel					4/1/2021
Top handler			Diesel			2019	350	1883	CHE Diesel					4/1/2021
Top handler			Diesel			2019	350	2968	CHE Diesel					4/1/2021
Top handler			Diesel			2017	350	3461	CHE Diesel					4/1/2021
Top handler			Diesel			2021	350	486	CHE Diesel					4/1/2021
Top handler			Diesel			2015	350	2753	CHE Diesel					4/1/2021
Top handler			Diesel			2021	350	219	CHE Diesel					4/1/2021
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2002	250	1718	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	1787	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	2254	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	260	2202	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2006	260	1062	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2006	260	2370	CHE Diesel		12/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2033	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	3060	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2387	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2147	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	2165	CHE Diesel		1/1/2009			
Top handler	Taylor	THDC-975	Diesel	Cummins	QSM11	2007	260	1889	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	4051	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2926	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3967	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2825	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2987	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2619	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3594	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3721	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3888	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3420	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2635	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2885	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2794	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	3357	CHE Diesel		1/1/2009			
Top handler	Taylor	TXC-976	Diesel	Cummins	QSM11	2008	260	2798	CHE Diesel		1/1/2009			
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	3367	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	3149	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Cummins	QSM11	2011	335	1971	CHE Diesel					
Top handler	Hyster	H-1150-HDCH	Diesel	Cummins	QSL 9L	2014	370	2891	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	3062	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	3168	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	2429	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	1279	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	2160	CHE Diesel					
Top handler	Hyster	H1150HD-CH	Diesel	Cummins	QSL 9L	2017	363	2103	CHE Diesel					
Top handler	Taylor	XLC 976E	Diesel	Volvo	12.8 L	2017	388	2777	CHE Diesel					
Top handler	Taylor	XLC 976E	Diesel	Volvo	12.8 L	2017	388	2740	CHE Diesel					
Top handler	Taylor	TEC-950L	Diesel	Cummins	M11	1999	250	4	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2005	330	294	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2005	330	628	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2005	330	1163	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2005	330	1583	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1011	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1097	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1292	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1315	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	3119	CHE Diesel					
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	2729	CHE Diesel					
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	2703	CHE Diesel					
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	2851	CHE Diesel					
Top handler	Taylor	THDC-975	Diesel	Cummins		2012	348	3070	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2012	335	3346	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2012	335	3381	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2013	335	3584	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	RD80/BD20	RD99
Top handler	Taylor		Diesel	Volvo		2013	335	3561	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2013	335	3949	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2013	335	4117	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2013	335	4042	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2014	335	3633	CHE Diesel					
Top handler	Taylor		Diesel	Volvo		2014	335	3501	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2015	350	1427	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	964	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2843	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2989	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	2534	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	3406	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	4044	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	3835	CHE Diesel					
Top handler	Hyster		Diesel	Cummins	QSL9	2014	350	4110	CHE Diesel					
Top handler	Hyster	H1150HD	Diesel	Cummins	QSL9	2014	350	4201	CHE Diesel					
Top handler	Hyster	H1150HD	Diesel	Cummins	QSL9	2014	350	4045	CHE Diesel					
Top handler			Diesel			2015	325	2401	CHE Diesel					
Top handler			Diesel			2015	325	2482	CHE Diesel					
Top handler			Diesel			2015	325	3268	CHE Diesel					
Top handler			Diesel			2015	325	2548	CHE Diesel					
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1353	CHE Diesel		1/1/2012			
Top handler	Taylor	THDC-955	Diesel	Cummins	QSM11	2006	335	1563	CHE Diesel		1/1/2012			
Top handler	TXLC976	2016	Diesel	Volvo	TAD13	2015	325	3892	CHE Diesel					
Top handler	TXLC976	2016	Diesel	Volvo	TAD13	2015	325	3873	CHE Diesel					
Top handler	Taylor	TEC-950L	Diesel	Cummins	QSM-11	2011	330	0	CHE Diesel		1/1/2012			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2003	330	1240	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	256	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	21	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2003	330	70	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	73	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	236	CHE Diesel		1/1/2013			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	423	CHE Diesel		1/1/2011			
Top handler	Fantuzzi	FDC500G5	Diesel	Cummins	QSM11	2004	330	262	CHE Diesel		1/1/2011			
Top handler	Taylor	TXLC976	Diesel	Volvo T4i	TAD1360WE	2012	256	1838	CHE Diesel					
Top handler	Taylor	TXLC976	Diesel	Volvo T4i	TAD1360WE	2012	256	2052	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3027	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3799	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3138	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3446	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3338	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2684	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3262	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	3210	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2630	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2959	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2266	CHE Diesel					
Top handler	Taylor	XLC976	Diesel	Volvo T4F	TAD1375VE	2016	388	2206	CHE Diesel					
Top handler	Taylor	ZLC	Electric						CHE Electric					
Top handler	Taylor	ZLC	Electric						CHE Electric					
Top handler	Linde	C400	Diesel	Cummins	QSM11	2006	325	142	CHE Diesel		8/1/2011			
Top handler	Taylor	XLC975	Diesel	Cummins	Tier 4 Final	2018		1243	CHE Diesel					
Top handler	Taylor	XEC207/8	Diesel	Cummins	QSB6.7 Tier 4 Fin:	2015		260	CHE Diesel					
Top handler	Fantuzzi	FDC25K8	Diesel	Caterpillar	C7.1 Tier 4 Final	2014	250	180	CHE Diesel					
Top handler	Taylor	XEC207/8	Diesel	Cummins	Tier 4 Final	2019		210	CHE Diesel					
Top handler	Taylor	THDC955	Diesel		Tier 4 Final	2018		65	CHE Diesel					
Truck	Terex	40T33-07	Diesel	Caterpillar	C15	2007	540	356	CHE Diesel					
Truck	Terex	40T 33-07	Diesel	Caterpillar	C-15	2009	540	114	CHE Diesel					
Truck	Terex	40T 33-07	Diesel	Cummins	QSK19	2006	525	272	CHE Diesel					
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	132	CHE On Road Diesel		1/1/2012			
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	304	CHE On Road Diesel		1/1/2012			
Truck	Freightliner		Diesel	Cummins	5.9	2005	185	131	CHE On Road Diesel		1/1/2012			
Truck	Peterbuilt		Diesel	Cummins	ISC	2006	240	898	CHE On Road Diesel					
Truck	Ford	F750	Diesel	Cummins	ISC	2008	240	990	CHE On Road Diesel					
Truck	Peterbuilt		Diesel	Cummins	ISC	2006	240	821	CHE On Road Diesel					
Truck			Diesel			1988		18	CHE Diesel					4/1/2021
Truck			Diesel			1996		486	CHE Diesel					4/1/2021
Truck	Ford	FT001	LPG	Ford	330EFV	1973		266	CHE Propane					
Truck	Sterling		Diesel	Caterpillar	C7	2005	250	562	CHE On Road Diesel		11/13/2013			
Truck	Sterling		Diesel	Caterpillar	C7	2005	250	529	CHE On Road Diesel		11/7/2013			
Truck	Sterling		Diesel	Cummins	ISC	2007	330	796	CHE On Road Diesel					
Truck	Sterling	LT8500	Diesel	Cummins	ISC	2008	250	1049	CHE On Road Diesel					
Truck	Peterbilt	335	Diesel	Cummins	ISC	2008	250	654	CHE On Road Diesel					
Truck	Freightliner		Diesel	Cummins	ISL	2013	350	907	CHE On Road Diesel					
Truck	Terex	40T 33-07	Diesel	Cummins	QSK19	2007	525	788	CHE Diesel					
Truck	Terex	40T 33-07	Diesel	Cummins	QSK19	2007	525	804	CHE Diesel					
Truck	Caterpillar	TA30	Diesel	Cummins	QSM11	2006	350	370	CHE Diesel					
Truck	Terex	TA400	Diesel	Scania		2014	444	2434	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1000	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1014	CHE Diesel					
Truck	Caterpillar	772G	Diesel	Caterpillar	C18	2020	598	1009	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3164	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3096	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3938	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3087	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2934	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3308	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3345	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2228	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3193	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3326	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3675	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3746	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3433	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	1611	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	2244	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3715	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3418	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3024	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3965	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3725	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3097	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3016	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	RD80/BD20	RD99
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2919	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2647	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2896	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2851	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2838	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1469	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2344	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	3046	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2544	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1109	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	3012	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1671	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	3113	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2303	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2452	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2700	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2216	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1787	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2315	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1669	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2023	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2668	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1205	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2853	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2506	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2371	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2440	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	3141	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	1240	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2734	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2664	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2224	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2681	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2762	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB240	2007	240	2413	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2005	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	3094	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2046	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2480	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2796	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2907	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2674	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2362	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2327	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2806	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2583	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2466	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2376	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2604	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	3187	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2843	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	3240	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2487	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2813	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2651	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB	2008	240	2596	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	2938	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2445	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2704	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2767	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2488	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1726	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2938	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2274	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1280	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	748	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2959	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	1363	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	736	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	3026	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2601	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	3195	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2302	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	2970	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	3228	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2819	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2999	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2684	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2804	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2333	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	3332	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2582	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	798	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2323	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2659	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2008	240	2264	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	50	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2567	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2846	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2990	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2390	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2935	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2462	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2474	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2786	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2012	220	2848	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	813	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	3133	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	709	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	5	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	RD80/BD20	RD99
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	3257	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2011	220	211	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3199	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2900	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2596	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3037	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3138	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	111	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2844	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2612	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2824	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	334	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2921	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3237	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3173	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3416	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2943	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3126	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3102	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3430	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1940	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2686	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3369	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2384	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2751	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	1756	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	498	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2565	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2558	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2050	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2929	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	2737	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2013	220	3107	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2718	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1112	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3194	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	301	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2974	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2864	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2931	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2977	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2364	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2848	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3039	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	800	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2742	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1903	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2878	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3073	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3368	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2657	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3088	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1275	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2903	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2495	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2846	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	3471	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2715	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2646	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	916	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	9	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2941	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3229	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	1735	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2880	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	5286	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	3034	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2389	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2889	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2014	220	2895	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3010	CHE On Road Diesel				6/1/2021	
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB	2015	225	3018	CHE On Road Diesel				6/1/2021	
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1576	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1812	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1667	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1016	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1606	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1113	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	393	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1395	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1601	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	267	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	117	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1166	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1348	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	2085	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1503	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	880	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1561	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1047	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1643	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	312	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1752	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1149	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1708	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1824	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1774	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1632	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1560	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	421	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1731	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	RD80/BD20	RD99
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1561	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1550	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1799	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1849	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	24	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1859	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1729	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1872	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1647	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1512	CHE On Road Diesel					
Yard tractor	Ottawa	C-50	Diesel	Cummins	ISB07 240	2008	240	1310	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1808	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2065	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2217	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1337	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1646	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2042	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1170	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	969	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1670	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1980	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2300	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1618	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2289	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1632	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2013	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2102	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2488	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1426	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	3013	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1804	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1809	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1734	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1656	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2117	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1236	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2589	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2341	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1674	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1945	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2234	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2290	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2276	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2330	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	1347	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2012	240	2000	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1805	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2563	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2271	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2441	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1412	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2089	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2171	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1951	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2415	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2419	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2021	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1774	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2185	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2120	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1899	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1300	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1680	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2558	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1866	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1726	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2398	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1905	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2138	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2195	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2101	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1588	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2527	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2223	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2327	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1831	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2522	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1769	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	2112	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1187	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1631	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel	Cummins	ISB6.7	2014	240	1595	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1728	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1459	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1305	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1606	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1407	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1427	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1844	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1760	CHE On Road Diesel					
Yard tractor	Ottawa		Diesel			2015		1288	CHE On Road Diesel					
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1412	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	475	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1312	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1328	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	694	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	258	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1043	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1112	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	639	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	919	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1301	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	2328	CHE On Road Diesel					4/1/2021

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	RD80/BD20	RD99
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1104	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	601	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	756	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	326	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1093	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1040	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1413	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1144	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	944	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1553	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	923	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1247	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	153	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1006	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1037	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	361	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	1008	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	237	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	454	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	1380	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	234	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	557	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity		Diesel	Cummins	ISB 07	2008	210	752	CHE On Road Diesel					4/1/2021
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-200	2007	200	0	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	769	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	597	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	677	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	430	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB-07	2007	200	240	CHE On Road Diesel					
Yard tractor	Ottowa	4x2	Diesel	Cummins	ISB-6.7	2015	200	607	CHE On Road Diesel					
Yard tractor	Ottowa	4x2	Diesel	Cummins	ISB-6.7	2015	200	627	CHE On Road Diesel					
Yard tractor	Ottowa	T2-4x2	Diesel	Cummins	QSB-6.7	2015	173	584	CHE Diesel					
Yard tractor	Ottowa	T2-4x2	Diesel	Cummins	QSB-6.7	2015	173	669	CHE Diesel					
Yard tractor	Magnum	TT120	LPG	Cummins	LPG 195	2000	174	100	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	3200	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1473	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	482	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	924	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	283	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1600	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1403	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1351	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	330	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1595	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1951	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1480	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	3756	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1308	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	865	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1108	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	807	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	988	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	2	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	2156	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	2076	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1633	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	690	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	0	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1264	CHE Propane					
Yard tractor	Kalmar	PT122	LPG	Cummins	LPG 195	2004	195	1089	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1372	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1458	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	998	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	888	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1993	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1524	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1903	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	63	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1744	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2521	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1866	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1759	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1742	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1538	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	19	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	588	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2181	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1076	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	1555	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	2516	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG	Ford	6.8L V10	2011	231	975	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	560	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2176	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2001	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	301	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1970	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2309	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2156	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2252	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	949	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1621	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	RD80/BD20	RD99
Yard tractor	Capacity	TJ9000	LPG			2007	195	2218	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1681	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2042	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1355	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	327	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2231	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2793	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2460	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1087	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2124	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1997	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2470	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	797	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2313	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	846	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1883	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2505	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2398	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2660	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2226	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	766	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2498	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1098	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1303	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1989	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2441	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1661	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2321	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2629	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2764	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1710	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2126	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1979	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1626	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2853	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1300	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2721	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1928	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2151	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	1036	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2768	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	3120	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2397	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2399	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2657	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2841	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2926	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2007	195	2755	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2583	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2240	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2518	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1719	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1961	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2332	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2107	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2690	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2582	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2865	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1835	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2842	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2532	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2090	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2055	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2858	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1878	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2535	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2272	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2413	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2632	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1387	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1953	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2288	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2797	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2238	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2911	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2559	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2559	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2100	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2536	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	1787	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2402	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2687	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	2756	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	0	CHE Propane					
Yard tractor	Capacity	TJ9000	LPG			2008	195	593	CHE Propane					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2158	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2101	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2089	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	1190	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2073	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1485	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1952	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	1064	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	346	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1784	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1671	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2240	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	RD80/BD20	RD99
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2132	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2063	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	659	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2167	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2573	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2303	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1626	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2073	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2077	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2824	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1975	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2298	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	1265	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2012	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2625	CHE Diesel					
Yard tractor	TICO	Pro-spotter	Diesel	Cummins	QSB Tier 4f	2019	158	2160	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2063	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1830	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2158	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2052	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1268	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1847	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2035	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2483	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1588	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2184	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2072	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1922	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2185	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1455	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2368	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1886	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	265	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2200	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	1437	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	2241	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel		QSB 6.7	2011	200	0	CHE Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2101	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	4708	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2152	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2185	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1728	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2773	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2194	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2652	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1741	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2489	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240		CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1943	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2182	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1210	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2810	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1592	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2442	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2896	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2115	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2699	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1938	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2773	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2548	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2293	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2250	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	445	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1247	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1807	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1897	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2931	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2263	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1555	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2657	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1158	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2573	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2577	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2395	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1959	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1119	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1852	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2182	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2495	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1550	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2805	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2485	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1642	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2632	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1967	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2888	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2844	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1442	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	0	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	1086	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2830	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2518	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2779	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2482	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2308	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2112	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	3633	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1606	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	3059	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	RD80/BD20	RD99
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2790	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	325	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1667	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	2818	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2905	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2008	240	1519	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2726	CHE On Road Diesel					
Yard tractor	Ottowa	C-50	Diesel	Cummins	ISB6.7	2007	240	2308	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2675	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2319	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2156	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1959	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2635	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	3009	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2651	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	998	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	0	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2222	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2756	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2744	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	0	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	0	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2974	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	888	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	3349	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	3346	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2735	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	39	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2866	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	0	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2264	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2711	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	3675	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	1943	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2012	250	2550	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2101	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2253	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	556	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1477	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	931	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1489	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2005	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2532	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2414	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2759	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	588	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2326	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2165	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2161	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3136	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2380	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2003	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2016	250	1071	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2498	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2235	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	43	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1854	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2894	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2435	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2628	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2751	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1987	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2944	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2543	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3101	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1884	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2115	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2765	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2948	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2008	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	1929	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3462	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2716	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3010	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2802	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3346	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	2232	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3597	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	ISB6.7	2014	250	3149	CHE On Road Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1774	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1894	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2310	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1371	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1527	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1147	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	0	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	1190	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2249	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2380	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2379	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2449	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2518	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2640	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2015	250	2069	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200		CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2643	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1451	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2866	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2783	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2759	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2277	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2054	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2374	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	RD80/BD20	RD99
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2630	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2507	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1877	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2366	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2174	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	2106	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1589	CHE Diesel					
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2016	200	1399	CHE Diesel					
Yard tractor	BYD	8Y	Electric						CHE Electric					
Yard tractor	BYD	8Y	Electric						CHE Electric					
Yard tractor	BYD	8Y	Electric						CHE Electric					
Yard tractor	BYD	8Y	Electric						CHE Electric					
Yard tractor	BYD	8Y	Electric						CHE Electric					
Yard tractor	Capacity		LNG	Cummins	ISLG-LNG 8.9L	2018	250	432	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	759	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	738	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	391	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1413	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1309	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1274	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	585	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1183	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	518	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1807	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1552	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1676	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1054	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	694	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	866	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1198	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1513	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1769	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1624	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	394	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	LNG	Cummins	ISLG-LNG 8.9L	2018	250	1116	CHE On Road LNG					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2366	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1664	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1212	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1807	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1061	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1186	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1693	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1797	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1681	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2148	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1478	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1891	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1437	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1435	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2486	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1967	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2032	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1599	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1183	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	1211	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	700	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	220	0	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	646	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1301	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	2352	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1220	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1538	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1475	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	830	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	2166	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1429	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1101	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1063	CHE On Road Diesel					
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 220	2008	220	1544	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	2196	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1101	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	868	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	2008	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1468	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1791	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	848	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1858	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 10	2011	240	1986	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	3016	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	2066	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1654	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1737	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	2083	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1854	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1530	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	2173	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1383	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	2201	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	777	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1941	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1794	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1523	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1534	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1538	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	2139	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1701	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1944	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	1309	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 240	2012	240	989	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	578	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1482	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1767	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2300	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	RD80/BD20	RD99
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2133	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1856	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	2336	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB6.7	2013	240	1573	CHE On Road Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1230	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1580	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1605	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1342	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1635	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2060	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1786	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1054	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1641	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2378	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2391	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1374	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1586	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1689	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	954	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1841	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2527	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1407	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1673	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1791	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1662	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	2347	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1372	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1294	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1004	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1408	CHE Diesel					
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2015	225	1536	CHE Diesel					
Yard tractor	OTTAWA		Diesel			2007		500	CHE Diesel					
Yard tractor	OTTAWA		Diesel			2007		100	CHE Diesel					
Yard tractor	OTTAWA		Diesel			2011		500	CHE Diesel					
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	2012	200	1292	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	417	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	737	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1361	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	2373	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	446	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1156	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	2477	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	2117	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1881	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	541	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1392	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1648	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	491	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	1844	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	392	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2012	200	3348	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	279	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	1668	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	1436	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	1853	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	2961	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	2051	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	3040	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	2264	CHE On Road Diesel					
Yard tractor	Ottawa	4 x 2	Diesel	Cummins	ISB6.7 200	2015	200	1550	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	4713	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	5161	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	4721	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2019	200	5026	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	4636	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	2671	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	5079	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	2999	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	3430	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	4030	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	3970	CHE On Road Diesel					
Yard tractor	Autocar	ACTT42	Diesel	Cummins	ISB6.7 200	2020	200	3675	CHE On Road Diesel					
Yard tractor	Ottawa	YT-30	Diesel	Cummins	Tier 4 Final	2019		321	CHE Diesel					