Port of
LONG BEACH
THE PORT OF CHOICE

AIR EMISSIONS INVENTORY - 2020

October 2021

Prepared by:
STARCREST CONSULTING GROUP, LLC

Port of Long Beach
2020 Air Emissions Inventory

Prepared for:

Port of
LONG BEACH
THE PORT OF CHOICE

October 2021

Prepared by:

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Long Beach, CA

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ENVIRONMENTAL MANAGEMENT
AIR QUALITY • CLIMATE • SUSTAINABILITY

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Please note that there may be minor inconsistencies, due to rounding, associated with emission estimates, percent contribution, and other calculated numbers between the various sections, tables, and figures of this report. A detailed Methodology Report is available on the Port's website[1]. This 2020Air Emission Inventory correlates with Version 2 of the Methodology Report. There were updates to OGV emission factors and HDV methodology due to EMFAC2021 which resulted in re-calculating previous year emissions.

EXECUTIVE SUMMARY

2020 Port of Long Beach Air Emissions Inventory Results

The Port of Long Beach 2020 Air Emissions Inventory results and a comparison to the Port's baseline 2005 air emissions inventory are presented in Table ES.1.

Table ES.1: 2005-2020 Air 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 MT
2005								
Ocean-going vessels	873	699	596	6,735	6,860	538	237	390,497
Harbor craft	45	41	45	1,107	5	294	70	44,746
Cargo handling equipment	47	44	47	1,289	11	398	65	103,710
Locomotives	43	40	43	1,273	76	179	66	60,579
Heavy-duty vehicles	205	196	205	5,273	37	1,523	318	391,610
Total	**1,213**	**1,020**	**936**	**15,677**	**6,989**	**2,932**	**756**	**991,142**
2020								
Ocean-going vessels	73	67	40	3,490	189	294	132	286,037
Harbor craft	20	18	20	597	1	444	66	50,171
Cargo handling equipment	4	4	3	245	1	742	31	121,060
Locomotives	20	19	20	536	0	127	31	44,453
Heavy-duty vehicles	6	6	6	1,052	4	269	42	386,990
Total	**123**	**113**	**89**	**5,920**	**195**	**1,876**	**301**	**888,712**
Change between 2005 and 2020 (percent)								
Ocean-going vessels	-92%	-90%	-93%	-48%	-97%	-45%	-44%	-27%
Harbor craft	-56%	-56%	-56%	-46%	-88%	51%	-5%	12%
Cargo handling equipment	-91%	-91%	-94%	-81%	-88%	86%	-53%	17%
Locomotives	-53%	-53%	-53%	-58%	-99%	-29%	-54%	-27%
Heavy-duty vehicles	-97%	-97%	-97%	-80%	-90%	-82%	-87%	-1%
Total	**-90%**	**-89%**	**-90%**	**-62%**	**-97%**	**-36%**	**-60%**	**-10%**

[1] *www.polb.com/environment/air/#emissions-inventory*

Reductions were seen in all pollutants when comparing 2020 to 2005, except for CO and CO_2e emissions for harbor craft and CHE. The reductions occurred despite a 21% increase in TEU throughput in 2020 as compared to 2005. Several factors contributed to the lower emissions:

- For OGVs, the primary reasons for emission reductions are fuel switching, shore power, fewer vessel calls, newer vessels and high participation in the Port's Green Flag Program that incentivizes shipping lines to slow down within 20 and 40 nautical miles. In 2020, 15 vessels called the Port with engines meeting the Tier III NO_x emission standard which is 75% cleaner than the Tier II engine standard.
- For harbor craft, the emissions in 2020 are lower than 2005 emissions due to the repowers that have occurred as required by the CARB Harbor Craft Regulation or funding incentives, removal of older vessels due to attrition, and more efficient operations. The increase in CO is related to an increase in Tier 2 and 3 engines that have higher CO emission rates compared to pre-Tier 2 and increase in activity. 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 (Tier 4) and CARB's Cargo Handling Equipment Regulation, along with funding incentives, resulted in replacement of older equipment with cleaner units, retrofits, and repowers, combined with efficiency in operations, led to lower emissions. The increase in CO_2e reflects increased activity and the fact that there are no lower CO_2 emission standards and limited emission control measures available.
- For locomotives, the decreases in fleet-wide emissions from line haul locomotives are due to rail companies meeting the terms of the memorandum of understanding (MOU) with CARB that resulted in Tier 2 locomotive fleet average emissions by 2010, 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) and substantial funding awarded towards truck replacement resulted in significant turnover of older trucks to newer and cleaner trucks as compared to 2005.

Table ES.2 summarizes and compares vessel arrivals and containerized cargo throughput in twenty-foot equivalent units (TEU) at POLB in 2005 and 2020. Relative to 2005 levels, containerized cargo throughput is up 21%, while containership arrivals to POLB are down 26%. Indicative of the larger vessels calling at POLB, the average number of TEU per vessel call is up 64% with an average 8,262 TEU per containership call in 2020.

Table ES.2: 2005-2020 Container Throughput and Vessel Call Comparison

Year	Container Throughput (TEU)	All Arrivals	Containership Arrivals	Average TEU per Call
2005	6,709,818	2,690	1,332	5,037
2020	8,113,315	1,868	982	8,262
Change	**21%**	**-31%**	**-26%**	**64%**

Emissions Comparison to Previous Year

Calendar year 2020 proved to be a challenging year to the maritime industry and therefore, the comparison of the 2020 to previous year is included. Several unique factors affected activity, efficiency and thus emissions in 2020: 1) the COVID-19 pandemic led cruise ships to stop passenger operations in mid-March which lowered berth calls but increased anchorage calls; 2) CARB provided exemptions to the At-Berth Regulation for (a) excessive heat in August - September timeframe and for (b) COVID-19 emergency reasons in 2020 which resulted in fewer shore power calls for containerships; 3) the largest decline in world liquid fuels consumption[2] in recent history resulted in less tankers calling the Port; 4) increased anchorage calls for containerships due to demand in consumer goods in second half of the year; and 5) worker safety agreement during 2020 to cap the number of gangs per ship to four meant less cranes for larger containerships and resulted in extended time at berth. Table ES.3 compares the 2020 emissions to the previous year.

Table ES.3: 2019-2020 Air 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 MT
2019								
Ocean-going vessels	77	71	46	3,999	198	338	151	300,038
Harbor craft	22	20	22	637	1	458	69	51,698
Cargo handling equipment	4	4	3	274	1	697	29	109,052
Locomotives	21	20	21	592	1	135	33	47,239
Heavy-duty vehicles	5	5	5	953	3	227	36	322,438
Total	**130**	**120**	**97**	**6,454**	**203**	**1,855**	**318**	**830,464**
2020								
Ocean-going vessels	73	67	40	3,490	189	294	132	286,037
Harbor craft	20	18	20	597	1	444	66	50,171
Cargo handling equipment	4	4	3	245	1	742	31	121,060
Locomotives	20	19	20	536	0	127	31	44,453
Heavy-duty vehicles	6	6	6	1,052	4	269	42	386,990
Total	**123**	**113**	**89**	**5,920**	**195**	**1,876**	**301**	**888,712**
Change between 2019 and 2020 (percent)								
Ocean-going vessels	-6%	-6%	-12%	-13%	-5%	-13%	-13%	-5%
Harbor craft	-10%	-10%	-10%	-6%	-3%	-3%	-4%	-3%
Cargo handling equipment	4%	4%	2%	-10%	11%	6%	5%	11%
Locomotives	-6%	-6%	-6%	-9%	-6%	-6%	-6%	-6%
Heavy-duty vehicles	16%	16%	15%	10%	19%	18%	16%	20%
Total	**-5%**	**-5%**	**-8%**	**-8%**	**-4%**	**1%**	**-5%**	**7%**

[2] U.S. Energy Information Administration,: *www.eia.gov/outlooks/steo/report/global_oil.php*

Table ES.3 shows that overall, 2020 emissions decreased when compared to previous year, except for GHG emissions (CO_2e) and CO which increased by 7% and 1%, respectively. Below are source category specific explanations for the emission changes when comparing 2020 to 2019:

- For OGVs, the total calls were lower by 11% in 2020 and this was mainly due to fewer visits from tankers and cruise ships. Tankers which typically utilize anchorage in normal times, had fewer anchorage stays than in previous years due to the lower liquid bulk demand. However, the increase in containership and cruise ship activity at anchorage resulted in an overall increase in anchorage emissions. The lower overall calls and fewer larger tanker visits at berth and anchorage resulted in lower total emissions in 2020 despite the increased anchorage emissions. In 2020, 15 vessels called the Port with propulsion engines that meet the Tier III NO_x emission standard which are 75% cleaner than the Tier II engine standard.
- For harbor craft, overall hours of operation were lower in 2020 for various vessel types, such as ferries and excursion vessels, and coupled with increased usage of newer and cleaner engines, resulted in lower emissions for 2020 as compared to previous year. For the first time, a harbor craft with Tier 4 propulsion engines is included in the inventory.
- For CHE, hours of use for equipment at the container terminals were higher due to the record container throughput in 2020 which led to an increase in emissions for most pollutants, except for NO_x emissions. The NO_x emissions were lower in 2020 due to increased usage of Tier 4 final CHE that has a lower NO_x emissions standard.
- For locomotives, the emissions decreased due to a decrease in on-dock and ICTF rail transport and a decrease in the fleet composite NO_x emission factor resulting from fleet mix improvement.
- For heavy-duty vehicles, the emissions increased due to increased container throughput and the decrease in on-dock and ICTF rail throughput which resulted in more truck trips. The PM and NO_x emissions increase was lower than the GHG emissions increase due to the newer fleet in 2020.

Table ES.4 summarizes and compares vessel arrivals and containerized cargo throughput in twenty-foot equivalent units (TEU) at POLB in 2019 and 2020. Relative to the previous year, containerized cargo throughput is up 6% and containership arrivals are up 2%, but the overall vessel calls to POLB are down 11% mainly due to fewer tanker and cruise ship calls. The average TEU per call increased by 5% which correlates to larger ships calling the Port in 2020 as compared to 2019.

Table ES.4: 2019-2020 Container Throughput and Vessel Call Comparison

Year	Container Throughput (TEU)	All Arrivals	Containership Arrivals	Average TEU per Call
2019	7,632,032	2,104	967	7,892
2020	8,113,315	1,868	982	8,262
Change (%)	**6%**	**-11%**	**2%**	**5%**

OGVs account for 59% of the PM and NO_x emissions for the Port of Long Beach's Air Emissions Inventory and have thus have the largest impact on the overall emissions. The following three tables provide more context to why the OGV emissions were lower in 2020 as compared to 2019. Table ES.5 presents the comparison for vessel arrivals to Port for 2020 and previous year. There were fewer vessel calls in 2020 for most vessels, except containership and other (general cargo, ATBs, miscellaneous).

Table ES.5: 2019-2020 Vessel Arrivals Comparison by Vessel Type

Vessel Type	2019 Arrival	2020 Arrival	2019-2020 Change
Containership	967	982	2%
Tanker	418	372	-11%
Cruise	254	72	-72%
Bulk Carrier	214	196	-8%
Auto Carrier/RoRo	179	161	-10%
Other	72	85	18%
Total	**2,104**	**1,868**	**-11%**

Table ES.6 presents in greater detail the tanker arrivals by the various tanker categories. It shows that the largest tankers, the very large and ultra-large crude tankers (VLCC and ULCC), had significantly lower calls in 2020 which had an impact in the lower OGV emissions for 2020 as compared to 2019, despite the increase in anchorage calls (Table ES.7) by other vessel types.

Table ES.6: 2019-2020 Tanker Arrivals Comparison

Tanker Category	2019 Arrival	2020 Arrival	2019-2020 Change
Tanker - Chemical	110	126	15%
Tanker - Handysize	6	8	33%
Tanker - Panamax	63	38	-40%
Tanker - Aframax	101	92	-9%
Tanker - Suezmax	73	86	18%
Tanker - VLCC	15	4	-73%
Tanker - ULCC	50	18	-64%
Total	**418**	**372**	**-11%**

Table ES.7 presents the comparison of vessels at anchorage. Containerships, cruise ships, and auto carriers had increased number of vessels at anchorage in 2020. There were fewer tankers at anchorage than in previous years due to the lower liquid bulk demand. The resulting overall change for anchorage was a 3% increase in 2020 as compared to 2019.

Table ES.7: 2019-2020 Anchorage Vessel Count Comparison by Vessel Type

Vessel Type	2019 Anchorage Count	2020 Anchorage Count	2019-2020 Change
Containership	101	257	154%
Tanker	634	532	-16%
Cruise	1	13	1200%
Bulk Carrier	195	158	-19%
Auto Carrier/RoRo	16	21	31%
Other	46	46	0%
Total	**993**	**1,027**	**3%**

For further details, please refer to Section 8 which provides emissions, activity and emission reduction strategy comparisons by source category for 2005-2020 and 2019-2020.

Emissions Metrics

To track operational efficiency improvements and the effectiveness of the emissions reduction strategies and measures, emissions are also estimated in total emissions per unit of cargo handled through the Port. Table ES.8 compares the tons of emissions per 10,000 TEU in 2005 and 2020.

Table ES.8: 2005-2020 Emissions Efficiency Metric Comparison, tons per 10,000 TEU

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2005	1.81	1.52	1.39	23.36	10.42	4.37	1.13	1,477
2020	0.15	0.14	0.11	7.30	0.24	2.31	0.37	1,095
Change (%)	**-92%**	**-91%**	**-92%**	**-69%**	**-98%**	**-47%**	**-67%**	**-26%**

Progress Towards CAAP Goals

Tables ES.9 and ES.10 summarize the air emissions reductions of DPM, NO_x, and SO_x associated with good movement sources and compared to the established CAAP San Pedro Bay (SPB) Emissions Reduction Standards for 2014 and 2023 from the baseline year 2005.

As a result of the implementation of CAAP measures and regulations, 2020 emission reduction levels of DPM, NO_x, and SO_x surpassed the 2023 SPB Emission Reduction Standards. Despite a 21% increase in TEU throughput, the NO_x emission reductions for the Port of Long Beach surpassed the 2023 standard for the first time in 2020.

Table ES.9: 2020 Emissions Reductions Compared to San Pedro Bay CAAP

Pollutant	2020 Actual Reductions	2014 Emission Reduction Standard	2023 Emission Reduction Standard
DPM	90%	72%	77%
NO_x	62%	22%	59%
SO_x	97%	93%	93%

Table ES.10: 2005-2020 Emissions Reductions Compared to San Pedro Bay CAAP by Source Category

Category	2005		2020
DPM (tons)			
Ocean-going vessels	596		40
Harbor craft	45		20
Cargo handling equipment	47		3
Locomotives	43		20
Heavy-duty vehicles	205		6
Total	**936**		**89**
Cumulative DPM Emissions Reduction Achieved in 2020			**90%**
CAAP San Pedro Bay DPM Emissions Reduction Standards		**2014**	**72%**
		2023	**77%**
NO_x (tons)			
Ocean-going vessels	6,735		3,490
Harbor craft	1,107		597
Cargo handling equipment	1,289		245
Locomotives	1,273		536
Heavy-duty vehicles	5,273		1,052
Total	**15,677**		**5,920**
Cumulative NO_x Emissions Reduction Achieved in 2020			**62%**
CAAP San Pedro Bay NO_x Emissions Reduction Standards		**2014**	**22%**
		2023	**59%**
SO_x (tons)			
Ocean-going vessels	6,860		189
Harbor craft	5		1
Cargo handling equipment	11		1
Locomotives	76		0
Heavy-duty vehicles	37		4
Total	**6,989**		**195**
Cumulative SO_x Emissions Reduction Achieved in 2020			**97%**
CAAP San Pedro Bay SO_x Emissions Reduction Standards		**2014**	**93%**
		2023	**93%**

SECTION 1 INTRODUCTION

The Port of Long Beach (Port or POLB) annual activity-based emissions inventories serve as the primary tool to track the Port's efforts to reduce air emissions from goods movement-related sources through implementation of measures identified in the San Pedro Bay Ports Clean Air Action Plan (CAAP) and regulations promulgated at the state and federal levels. To quantify the annual air emissions, the Port relies on operational information provided by Port tenants and operators. Development of the annual air emissions estimates is coordinated with a technical working group (TWG) comprised of representatives from the Port, the Port of Los Angeles, 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). Through collaboration with the TWG, the ports seek the consensus of the air regulatory agencies regarding the methodologies used to develop the emissions estimates.

Emissions from the following goods movement-related emission source categories are evaluated:

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

Exhaust emissions of the following pollutants, including greenhouse gases, are quantified in the inventory:

- 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)
- Carbon dioxide equivalent (CO_2e)

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

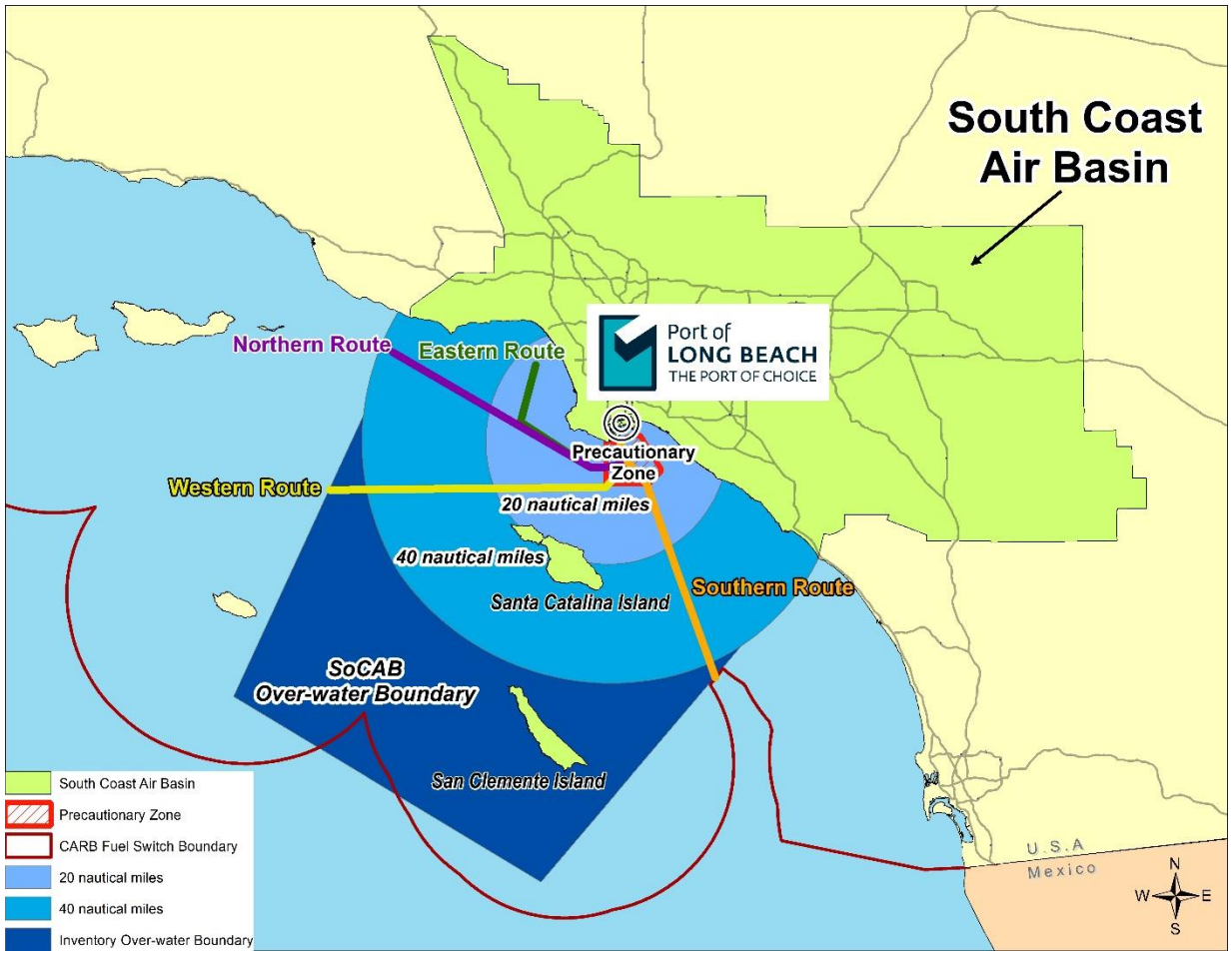
- CO_2 – 1
- CH_4 – 25
- N_2O - 298

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

Geographical Domain

Figure 1.1 shows the Port of Long Beach emissions inventory domain. For OGV and harbor craft, the geographical domain lies within the harbor and up to the South Coast Air Basin (SoCAB) over-water 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, emissions are estimated from the Port to the cargo's first point of rest within the SoCAB or up to the basin boundary, whichever comes first.

Figure 1.1: Port of Long Beach Emissions Inventory Domain



Emissions are estimated for activities within Port terminals and facilities. Figure 1.2 shows the various terminals color coded by terminal type. As an example, container terminals are orange in Figure 1.2.

Figure 1.2: Port of Long Beach Terminals

SECTION 2 OCEAN-GOING VESSELS

Source Description

Vessels are grouped by the type of cargo they transport:

- Auto carrier
- Containership
- General cargo
- Ocean-going tugboat (ATB/ITB)
- Miscellaneous vessel
- Bulk carrier
- Cruise vessel
- Reefer vessel
- Roll-on roll-off vessel (RoRo)
- Tanker

Emissions are estimated from vessel main engines (propulsion), auxiliary engines, and auxiliary boilers (boilers). For 2020, containerships and tankers were the predominant vessels with 73% of total movements and 80% of the NO_x emissions.

Emissions Estimation Methodology

The methodology to estimate 2020 emissions from OGVs is described in Section 2 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 2[4]. The following improvements for methodology and activity were made in estimating 2020 OGV emissions:

- Emission factors were updated to be consistent with ARB and EPA's latest methodology.
- Tier III vessels at low loads - Tier II NO_x emission factor used below 25%.
- Updated call-weighted averages of VBP data collected by mode from 2005 to 2020 for auxiliary engine and auxiliary boiler default loads.
- Added cruise ship auxiliary engine and auxiliary boiler loads to take into consideration the 2020 COVID-19 pandemic period which resulted in the cruise ship industry suspending passenger operations from March 13 through the end of the year in 2020.

Mounting evidence from engine manufacturers[5] and classification societies[6] suggest that Tier III propulsion engines will not meet Tier III emission standards when operating below 25% load because the exhaust heat does not reach the necessary temperature for selective catalytic reduction (SCR) or exhaust gas recirculation (EGR) systems to effectively reduce emissions. As such, 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.

[4]San Pedro Bay Ports Emissions Inventory Methodology Report, Version 2, *www.polb.com/environment/air/#emissions-inventory*
[5] MAN Diesel & Turbo, "Tier III Two-Stroke Technology"
[6] DNV-GL, "NOx Tier III Update: Choices and challenges for on-time compliance," November 2017.

Tables 2.1 and 2.2 list the emission factors for propulsion and auxiliary engines using 0.1% sulfur MGO fuel, respectively. The updated emission factors are per EPA's Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (September 2020)[7]. Auxiliary boilers use the emissions factors listed for steamship in Table 2.1.

Table 2.1: OGV Emission Factors for Diesel Propulsion, Steamship Propulsion and Gas Turbine Engines, g/kWh

Engine Category	Tier	Model Year Range	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2	N_2O	CH_4
Slow Speed Main	0	1999 and older	0.18	0.17	0.18	17.0	0.36	1.40	0.60	593	0.029	0.012
Slow Speed Main	I	2000 to 2010	0.18	0.17	0.18	16.0	0.36	1.40	0.60	593	0.029	0.012
Slow Speed Main	II	2011 to 2015	0.18	0.17	0.18	14.4	0.36	1.40	0.60	593	0.029	0.012
Slow Speed Main	III	2016 and newer	0.18	0.17	0.18	3.4	0.36	1.40	0.60	593	0.029	0.012
Medium Speed Main	0	1999 and older	0.19	0.17	0.19	13.2	0.40	1.10	0.50	657	0.029	0.012
Medium Speed Main	I	2000 to 2010	0.19	0.17	0.19	12.2	0.40	1.10	0.50	657	0.029	0.012
Medium Speed Main	II	2011 to 2015	0.19	0.17	0.19	10.5	0.40	1.10	0.50	657	0.029	0.012
Medium Speed Main	III	2016 and newer	0.19	0.17	0.19	2.6	0.40	1.10	0.50	657	0.029	0.012
Gas Turbine		All	0.01	0.01	0.00	5.7	0.59	0.20	0.10	962	0.075	0.002
Steamship		All	0.20	0.19	0.00	2.0	0.59	0.20	0.10	962	0.075	0.002

Table 2.2: Emission Factors for Auxiliary Engines using 0.1% S, g/kWh

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

Geographical Domain

The geographical domain or overwater boundary for OGVs includes the berths and waterways in the Port proper as shown in Figure 1.2 and all vessel movements within the forty nautical mile (nm) arc from Point Fermin and the SoCAB as shown in Figure 1.1. The northern boundary is the Ventura County line, and the southern boundary is the Orange County line. It should be noted that although the overwater boundary extends further off the coast to incorporate the South Coast air quality modeling domain, most of the vessel movements occur within the 40 nm arc.

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

Data and Information Acquisition

The primary sources of data and operational information for OGV were obtained from:

- Marine Exchange of Southern California
- Vessel Speed Reduction Program
- Jacobsen Pilot Service
- IHS Markit Maritime data
- Port Vessel Boarding Program (VBP)
- Port tanker loading information
- Terminal shore power activity data, including usage of alternative at-berth emission control technology (AMECS)

During the 2019 EI process, uncertainty regarding the vessel maximum speed values that are provided by IHS Markit Maritime Data were identified. For the 2020 EI, to the extent it is available, maximum speed from IHS Markit Maritime data is used and if not available, service speed (most populated speed field) is used.

The alternative technology for treating at-berth emissions from containerships in 2020 include the Advanced Maritime Emission Control System (AMECS). Note that the AMECS was unable to be utilized in the fourth quarter of 2020 due to the system's loss of CARB certification.

Emission Estimates

Summaries of the 2020 OGV emissions estimates are presented in Tables 2.3 through 2.5. Due to rounding, values may not add up to totals provided. In 2020, containerships and tankers have the highest emissions, combined, it results in over 80% of total OGV emissions.

Table 2.3: 2020 Ocean-going Vessel Emissions by Vessel Type, tons and metric tons

Vessel Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Auto Carrier	1.8	1.7	1.6	123.9	4.1	12.1	5.8	6,250
Bulk	3.8	3.5	2.9	233.2	9.6	20.2	6.9	14,518
Containership	30.3	27.9	18.2	1,793.4	78.8	134.3	70.3	119,583
Cruise	3.4	3.2	3.0	196.4	8.0	18.0	6.8	12,018
General Cargo	1.0	0.9	0.8	54.3	2.2	5.1	2.0	3,348
Ocean Tugboat (ATB)	0.1	0.1	0.1	6.1	0.2	0.6	0.2	319
Miscellaneous	0.6	0.5	0.5	36.1	1.3	2.9	1.1	1,962
RoRo	1.3	1.2	0.1	23.2	3.6	1.7	0.8	5,414
Tanker	30.4	28.0	12.9	1,023.4	80.8	99.0	37.8	122,625
Total	**72.7**	**66.9**	**40.1**	**3,489.9**	**188.6**	**293.8**	**131.8**	**286,037**

The emissions for the CARB-certified capture and control system to treat emissions from auxiliary engines are included in the auxiliary engine emissions.

Table 2.4: 2020 Ocean-going Vessel Emissions by Emissions Source, tons and metric tons

Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Auxiliary Engine	29.0	26.6	29.0	1,734.5	65.3	169.5	61.6	98,440
Auxiliary Boiler	31.8	29.2	0.0	311.2	92.4	31.5	15.8	140,775
Main Engine	12.0	11.0	11.2	1,444.2	30.9	92.8	54.5	46,822
Total	**72.7**	**66.9**	**40.1**	**3,489.9**	**188.6**	**293.8**	**131.8**	**286,037**

Table 2.5: 2020 Ocean-going Vessel Emissions by Mode, tons and metric tons

Mode	Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Transit	Auxiliary Engine	4.7	4.3	4.7	288.0	10.6	27.5	10.0	15,963
Transit	Auxiliary Boiler	0.6	0.6	0.0	5.9	1.8	0.6	0.3	2,682
Transit	Main Engine	10.5	9.7	9.7	1,295.6	28.3	79.8	42.8	42,904
Total Transit		**15.8**	**14.6**	**14.5**	**1,589.5**	**40.7**	**107.8**	**53.1**	**61,549**
Maneuvering	Auxiliary Engine	1.5	1.4	1.5	93.3	3.4	8.9	3.2	5,172
Maneuvering	Auxiliary Boiler	0.3	0.2	0.0	2.5	0.8	0.3	0.1	1,148
Maneuvering	Main Engine	1.5	1.3	1.4	148.6	2.6	13.0	11.7	3,918
Total Maneuvering		**3.2**	**3.0**	**3.0**	**244.4**	**6.8**	**22.2**	**15.1**	**10,238**
Hotelling at-berth	Auxiliary Engine	11.9	10.9	11.9	714.5	26.9	69.9	25.3	40,557
Hotelling at-berth	Auxiliary Boiler	23.7	21.8	0.0	232.3	69.0	23.5	11.8	105,118
Hotelling at-berth	Main Engine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Total Hotelling at-berth		**35.6**	**32.8**	**11.9**	**946.9**	**95.9**	**93.5**	**37.1**	**145,675**
Hotelling at-anchorage	Auxiliary Engine	10.8	10.0	10.8	638.7	24.4	63.2	23.0	36,747
Hotelling at-anchorage	Auxiliary Boiler	7.2	6.6	0.0	70.3	20.9	7.1	3.6	31,827
Hotelling at-anchorage	Main Engine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Total Hotelling at-anchorage		**18.0**	**16.6**	**10.8**	**709.1**	**45.3**	**70.3**	**26.5**	**68,574**
Total		**72.7**	**66.9**	**40.1**	**3,489.9**	**188.6**	**293.8**	**131.8**	**286,037**

Operational Profiles

Table 2.6 presents the numbers of arrivals, departures, and shifts associated with vessels at the Port in 2020. An arrival is a vessel that arrives from the sea. For the first time, 23,000+ TEU vessels called the Port in 2020.

Table 2.6: 2020 Total OGV Activities

Vessel Type	Arrival	Departure	Shift	Total
Auto Carrier	146	146	40	332
Bulk	167	172	186	525
Bulk - Heavy Load	1	1	0	2
Bulk - Self Discharging	28	28	2	58
Container - 1000	26	25	10	61
Container - 2000	144	136	44	324
Container - 3000	95	95	36	226
Container - 4000	182	178	93	453
Container - 5000	16	15	11	42
Container - 6000	54	55	8	117
Container - 8000	150	155	33	338
Container - 9000	47	46	14	107
Container - 10000	86	88	12	186
Container - 11000	43	41	15	99
Container - 12000	7	7	1	15
Container - 13000	61	58	26	145
Container - 14000	58	57	23	138
Container - 15000	7	5	8	20
Container - 16000	1	1	0	2
Container - 19000	5	5	1	11
Container - 23000	0	2	2	4
Cruise	72	71	13	156
General Cargo	71	75	35	181
Ocean Tugboat (ATB/ITB)	13	11	20	44
Miscellaneous	1	3	6	10
RoRo	15	15	3	33
Tanker - Chemical	126	123	176	425
Tanker - Handysize	8	8	12	28
Tanker - Panamax	38	38	99	175
Tanker - Aframax	92	90	133	315
Tanker - Suezmax	86	85	134	305
Tanker - VLCC	4	4	11	19
Tanker - ULCC	18	20	82	120
Total	**1,868**	**1,859**	**1,289**	**5,016**

Auxiliary engines are used to provide electricity to equipment onboard the vessel. Actual VBP data, if available, is used to estimate emissions from auxiliary engines. For berth hoteling emissions, the actual shore power records are used if the vessel connected to shore power. If actual VBP data or shore power data is not available, default values are used. Table 2.7 presents the auxiliary engine load defaults by vessel type and by mode used to estimate emissions in 2020. These defaults values are produced by calculating the call-weighted average of all VBP data points collected from 2005-2020 for each vessel type for the auxiliary engines. There was no engine load data collected for a new vessel type, 23,000 TEU containership. The engine load defaults by mode were estimated by interpolating from the closest known data point, in this case, the 19,000 TEU containership.

Table 2.7: 2020 Average Auxiliary Load Defaults by Mode, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	613	1,547	1,120	628
Bulk	288	330	501	271
Bulk - Heavy Load	462	1,223	272	253
Bulk - Self Discharging	305	807	179	305
Container - 1000	1,721	1,522	963	1,000
Container - 2000	1,634	2,036	663	1,012
Container - 3000	2,027	1,542	1,294	713
Container - 4000	1,251	2,490	814	704
Container - 5000	1,214	2,129	949	982
Container - 6000	1,943	2,583	1,007	1,274
Container - 8000	1,674	2,731	1,387	1,484
Container - 9000	1,597	2,322	1,107	1,114
Container - 10000	1,382	1,797	1,007	1,028
Container - 11000	1,517	2,267	942	1,009
Container - 12000	2,085	2,660	1,841	1,776
Container - 13000	1,643	2,439	1,154	1,165
Container - 14000	1,763	2,552	1,295	1,224
Container - 15000	1,850	2,200	850	1,100
Container - 16000	1,675	1,975	925	1,050
Container - 19000	2,000	2,800	1,200	1,100
Container - 23000	2,100	2,940	1,260	1,155
General Cargo	406	799	603	180
Ocean Tugboat (ATB/ITB)	76	202	99	76
Miscellaneous	1,421	1,535	1,391	700
RoRo	132	396	229	132
Tanker - Chemical	422	559	1,395	343
Tanker - Handysize	662	682	1,050	560
Tanker - Panamax	485	553	832	384
Tanker - Aframax	505	615	986	463
Tanker - Suezmax	667	568	689	509
Tanker - VLCC	630	741	1,011	585
Tanker - ULCC	771	912	1,229	625

Table 2.8 presents the 2020 load defaults for the auxiliary boilers by vessel type and by mode, which are produced by calculating the call-weighted average of all VBP data points collected from 2005-2020 for each vessel type.

Table 2.8: Auxiliary Boiler Load Defaults by Mode, kW

Vessel Type	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
Auto Carrier	85	187	323	314
Bulk	52	122	156	156
Bulk - Heavy Load	35	94	125	125
Bulk - Self Discharging	44	103	132	132
Container - 1000	148	296	760	376
Container - 2000	79	142	323	180
Container - 3000	188	180	888	361
Container - 4000	161	335	490	487
Container - 5000	223	446	484	477
Container - 6000	280	544	761	757
Container - 8000	241	442	558	554
Container - 9000	286	526	555	513
Container - 10000	278	418	598	598
Container - 11000	202	362	456	463
Container - 12000	351	586	677	677
Container - 13000	257	357	580	594
Container - 14000	379	552	696	696
Container - 15000	259	395	402	402
Container - 16000	238	440	525	525
Container - 19000	38	144	848	848
Container - 23000	40	151	890	890
General Cargo	56	127	169	168
Ocean Tugboat (ATB/ITB)	0	0	0	0
Miscellaneous	54	109	140	140
RoRo	104	206	282	282
Tanker - Chemical	94	137	421	261
Tanker - Handysize	144	287	3,089	323
Tanker - Panamax	262	382	3,547	538
Tanker - Aframax	196	259	4,976	390
Tanker - Suezmax	144	99	8,170	516
Tanker - VLCC	240	116	8,262	467
Tanker - ULCC	235	322	10,718	366

Tankers' boilers produce steam for steam-powered liquid cargo pumps when discharging, steam powered inert gas fans, and to heat fuel for pumping. Less steam is needed when liquid cargo is being loaded. Since loading and discharging data was 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.

The default loads do not include loads from diesel electric tankers. Diesel electric crude oil tankers have significant auxiliary equipment/load differences than typical motor vessels. Specific auxiliary engine loads, collected from VBP, are used for diesel electric tankers for both the auxiliary engine and auxiliary boilers. All of the diesel electric tankers that called the Port used VBP data in 2020.

On March 13, 2020, the cruise industry voluntarily suspended cruise ship operations due to the COVID-19 pandemic. This action came just one day before the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) officially issued a no-sail order on March 14, 2020. Under the no-sail order cruise ship operators were required to suspend passenger operations. This resulted in a significantly reduced auxiliary engine load requirement due to reduction in onboard hotel services. Even without passengers on board, transitory cruise vessels were active in the area during this time and periodically berthed at the cruise terminal to receive food, supplies, and/or services. Additionally, ships were also participating in activities required by the CDC to develop plans to prevent, mitigate, and respond to the spread of COVID-19 and later, as part of the CDC's Conditional Sailing Order framework, were preparing for the eventual return to passenger operations.

The energy demand on a cruise ship is greatly reduced when no passengers are on board due to a reduction in hotel services. For 2020, the existing methodology was followed to calculate emissions with a reduction applied for reduced operational loads due to no passengers. This reduction was determined by conducting a comparison of the pre-COVID POLB at-berth shore power kW values with the values during the COVID period. This comparison showed an average 31% reduction in energy use. Even at reduced loads, hotel activities remain relatively constant across all modes (transit, maneuvering, berth, and anchor) so this reduction was applied directly to all modes for cruise ships operating during this time frame.

Cruise ship auxiliary engine defaults are listed in Table 2.9. These auxiliary engine defaults values are produced by calculating the call-weighted average of all VBP data by mode collected from 2005-2020 for each cruise vessel size group. Default loads for cruise ship anchorage hotelling were added this year to account for the COVID-19 pandemic shifting some cruise activities to anchorage. Cruise ship anchorage activities were non-existent in previous years. Only anchorage loads that were collected under the VBP were included in the default table since the anchorage loads are not commonly used.

Table 2.9: 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 2.10 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. In 2020, all of the cruise vessels that visited the Port were diesel electric.

Table 2.10: Cruise Ship Auxiliary Boiler Load Defaults by Mode for, kW

Passenger Range	Transit	Maneuvering	Berth Hotelling	Anchorage Hotelling
<1,500	992	784	766	867
1,500 < 2,000	1,070	1,145	976	1,951
2,000 < 2,500	1,382	1,773	1,506	3,005
2,500 < 3,000	596	602	431	895
3,000 < 3,500	697	1,199	1,068	1,984
3,500 < 4,000	401	347	868	989
4,000 < 4,500	0	0	503	503
4,500 < 5,000	0	0	503	503

Vessel hotelling times at-berth, regardless of shore power usage, are shown in Table 2.11. The RoRos include ready reserve vessels that are home based and use shore power. The miscellaneous vessels, part of missile launch operations, were berthed at the Port for the last time in 2020.

Table 2.11: 2020 At-Berth Hotelling Times, hours

Vessel Type	Min Hours	Max Hours	Avg Hours
Auto Carrier	4.9	58.3	14.5
Bulk - General	6.4	413.8	69.9
Bulk - Heavy Load	23.7	23.7	23.7
Bulk - Self Discharging	17.0	46.2	32.6
Container - 1000	10.5	105.8	28.2
Container - 2000	7.7	163.6	38.4
Container - 3000	10.3	86.2	35.6
Container - 4000	6.3	144.0	29.9
Container - 5000	2.8	115.1	48.4
Container - 6000	16.0	157.8	73.8
Container - 8000	9.9	169.3	64.4
Container - 9000	11.0	293.6	57.4
Container - 10000	22.6	236.3	100.1
Container - 11000	8.3	190.4	96.3
Container - 12000	96.3	165.6	115.7
Container - 13000	6.1	254.9	117.3
Container - 14000	13.4	301.4	137.9
Container - 15000	13.3	175.3	107.4
Container - 16000	165.4	165.4	165.4
Container - 19000	117.0	191.3	164.5
Container - 23000	53.1	59.3	56.2
Cruise	5.7	695.4	32.1
General Cargo	4.7	136.3	35.5
Ocean Tugboat (ATB/ITB)	12.0	57.7	26.1
Miscellaneous	321.4	1,203.7	851.9
RoRo	21.7	8,783.8	1,133.3
Tanker - Chemical	8.7	212.0	46.7
Tanker - Handysize	23.2	107.1	53.4
Tanker - Panamax	10.0	140.1	44.7
Tanker - Aframax	7.1	174.8	44.3
Tanker - Suezmax	9.3	66.1	25.3
Tanker - VLCC	19.6	49.7	29.5
Tanker - ULCC	15.7	57.5	29.3

Table 2.12: 2020 At-Anchorage Hotelling Times, hours

Vessel Type	Min Hours	Max Hours	Avg Hours	Anchorage Activity Count
Auto Carrier	1.3	138.5	30.7	20
Bulk - General	3.0	464.8	69.9	156
Bulk - Heavy Load	0.0	0.0	0.0	0
Bulk - Self Discharging	2.8	7.3	5.0	2
Container - 1000	5.9	179.3	60.9	10
Container - 2000	2.7	250.5	54.7	31
Container - 3000	0.9	262.7	70.5	23
Container - 4000	2.0	290.1	102.4	75
Container - 5000	12.9	229.9	81.8	9
Container - 6000	4.8	125.5	54.0	6
Container - 8000	6.5	158.3	48.1	24
Container - 9000	8.8	191.8	65.8	10
Container - 10000	5.1	88.3	40.5	9
Container - 11000	11.9	311.5	118.9	12
Container - 12000	18.1	18.1	18.1	1
Container - 13000	19.2	259.3	81.9	19
Container - 14000	3.6	242.8	94.4	21
Container - 15000	7.3	190.1	63.2	6
Container - 16000	0.0	0.0	0.0	0
Container - 19000	48.2	48.2	48.2	1
Container - 23000	0.0	0.0	0.0	0
Cruise	1.4	169.0	62.6	13
General Cargo	0.4	200.1	54.1	28
Ocean Tugboat (ATB/ITB)	4.0	257.8	44.3	14
Miscellaneous	8.2	185.6	67.1	4
RoRo	19.7	19.7	19.7	1
Tanker - Chemical	1.5	509.2	52.2	114
Tanker - Handysize	5.8	179.9	50.5	11
Tanker - Panamax	1.2	852.8	119.8	89
Tanker - Aframax	1.8	977.6	87.6	131
Tanker - Suezmax	2.7	1,474.0	96.6	119
Tanker - VLCC	21.4	292.8	121.5	10
Tanker - ULCC	1.5	604.3	150.5	58
Total				**1,027**

For this EI, a frequent caller is a vessel that made six or more calls in one calendar year. Table 2.13 shows that 9% of vessels that called the Port in 2020 are frequent callers (i.e., six or more calls/year).

Table 2.13: 2020 Percentage of Frequent Callers

Vessel Type	Frequent Vessels	Total Vessels	Percent Frequent Vessels
Auto Carrier	0	96	0%
Bulk - General	0	150	0%
Bulk - Heavy Load	0	1	0%
Bulk - Self Discharging	1	4	25%
Container - 1000	2	7	29%
Container - 2000	11	29	38%
Container - 3000	6	12	50%
Container - 4000	12	47	26%
Container - 5000	0	10	0%
Container - 6000	0	31	0%
Container - 8000	11	37	30%
Container - 9000	3	13	23%
Container - 10000	0	24	0%
Container - 11000	3	16	19%
Container - 12000	0	4	0%
Container - 13000	1	24	4%
Container - 14000	0	32	0%
Container - 15000	0	3	0%
Container - 16000	0	1	0%
Container - 19000	0	4	0%
Container - 23000	0	2	0%
Cruise	3	4	75%
General Cargo	1	52	2%
Ocean Tugboat (ATB/ITB)	0	7	0%
Miscellaneous	0	1	0%
RoRo	1	2	50%
Tanker - Chemical	5	60	8%
Tanker - Handysize	1	3	33%
Tanker - Panamax	1	24	4%
Tanker - Aframax	4	27	15%
Tanker - Suezmax	7	28	25%
Tanker - VLCC	0	2	0%
Tanker - ULCC	0	15	0%
Total	**73**	**772**	
Average			**9%**

Table 2.14 presents the percent of engine tier by vessel type for arrivals/shift at the Port in 2020. In 2020, 15 vessels had certified Tier III main engines: one auto carrier, seven containerships and seven tanker vessels. 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.

Table 2.14: 2020 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	5%	85%	10%	1%	0%	148
Bulk - General	0%	43%	57%	0%	0%	167
Bulk - Heavy Load	0%	0%	100%	0%	0%	1
Bulk - Self Discharging	11%	14%	75%	0%	0%	28
Container - 1000	11%	89%	0%	0%	0%	27
Container - 2000	1%	60%	1%	0%	38%	144
Container - 3000	23%	8%	42%	27%	0%	95
Container - 4000	16%	81%	3%	0%	0%	183
Container - 5000	0%	100%	0%	0%	0%	16
Container - 6000	0%	91%	9%	0%	0%	54
Container - 8000	0%	52%	48%	0%	0%	154
Container - 9000	0%	14%	86%	0%	0%	49
Container - 10000	0%	38%	62%	0%	0%	88
Container - 11000	0%	72%	28%	0%	0%	43
Container - 12000	0%	57%	43%	0%	0%	7
Container - 13000	0%	21%	79%	0%	0%	62
Container - 14000	0%	15%	82%	3%	0%	59
Container - 15000	0%	0%	0%	100%	0%	7
Container - 16000	0%	0%	100%	0%	0%	1
Container - 19000	0%	0%	100%	0%	0%	5
Container - 23000	0%	0%	100%	0%	0%	2
Cruise	72%	7%	21%	0%	0%	72
General Cargo	0%	69%	31%	0%	0%	73
Ocean Tugboat (ATB/ITB)	0%	69%	31%	0%	0%	16
Miscellaneous	100%	0%	0%	0%	0%	1
RoRo	0%	0%	93%	0%	7%	15
Tanker - Chemical	0%	44%	52%	4%	0%	145
Tanker - Handysize	75%	25%	0%	0%	0%	8
Tanker - Panamax	0%	67%	33%	0%	0%	39
Tanker - Aframax	0%	44%	57%	0%	0%	92
Tanker - Suezmax	13%	74%	11%	2%	0%	86
Tanker - VLCC	0%	0%	100%	0%	0%	4
Tanker - ULCC	0%	22%	78%	0%	0%	18
Total	**7%**	**51%**	**37%**	**2.0%**	**3.0%**	**1,909**

SECTION 3 HARBOR CRAFT

Source Description

Emissions from the following types of diesel-fueled harbor craft were quantified:

- Assist tugboats
- Crew, supply, and work boats
- Ferry vessels
- Excursion vessels
- Government vessels
- Harbor tugboats
- Ocean tugboats

Emissions Estimation Methodology

The methodology to estimate emissions from harbor craft is similar to that used in CARB's emissions inventory for commercial harbor craft emissions operating in California.[8] The methodology to estimate 2020 emissions from harbor craft is described in Section 3 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 2[9].

Geographical Domain

Emissions are estimated for harbor craft operating within the South Coast Air Basin over-water boundary.

Data and Information Acquisition

Harbor craft owners and operators were contacted to obtain key physical and operational parameters, including:

- Type of harbor craft
- Engine count
- Engine horsepower (or kilowatts) for main and auxiliary engines
- Engine model year
- Operating hours in calendar year 2020

[8] *www.polb.com/environment/air/emissions.asp*
[9] San Pedro Bay Ports Emissions Inventory Methodology Report, Version 2, *www.polb.com/environment/air/#emissions-inventory*

Emission Estimates

Table 3.1 summarizes the estimated harbor craft vessel emissions by vessel type and engine type.

Table 3.1: 2020 Harbor Craft Emissions by Vessel and Engine Type, tons and metric tons

Harbor Craft	Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Assist tugboat	Auxiliary	0.4	0.3	0.4	14.2	0.0	13.2	2.2	1,495
	Propulsion	4.4	4.1	4.4	131.0	0.1	108.0	14.4	11,647
Assist tugboat Total		**4.7**	**4.4**	**4.7**	**145.2**	**0.1**	**121.2**	**16.6**	**13,142**
Crew Boat	Auxiliary	0.1	0.1	0.1	2.5	0.0	2.1	0.5	206
	Propulsion	1.6	1.4	1.6	46.5	0.0	32.0	5.0	3,916
Crew boat Total		**1.7**	**1.5**	**1.7**	**49.1**	**0.0**	**34.0**	**5.5**	**4,121**
Excursion	Auxiliary	0.1	0.1	0.1	1.9	0.0	1.4	0.4	142
	Propulsion	0.4	0.3	0.4	12.1	0.0	9.0	1.3	959
Excursion Total		**0.5**	**0.4**	**0.5**	**14.0**	**0.0**	**10.4**	**1.7**	**1,102**
Ferry	Auxiliary	0.1	0.1	0.1	2.7	0.0	2.0	0.5	223
	Propulsion	2.9	2.7	2.9	86.4	0.1	67.2	9.5	7,180
Ferry Total		**3.1**	**2.8**	**3.1**	**89.1**	**0.1**	**69.3**	**10.1**	**7,403**
Government	Auxiliary	0.2	0.2	0.2	7.4	0.0	6.3	1.1	709
	Propulsion	1.1	1.1	1.1	47.6	0.1	43.3	6.1	4,724
Government Total		**1.3**	**1.2**	**1.3**	**55.0**	**0.1**	**49.6**	**7.1**	**5,433**
Ocean tugboat Total	Auxiliary	0.2	0.1	0.2	4.5	0.0	4.0	0.7	449
	Propulsion	5.6	5.2	5.6	167.4	0.1	99.4	16.0	12,452
Ocean tugboat Total		**5.8**	**5.3**	**5.8**	**171.9**	**0.1**	**103.3**	**16.7**	**12,901**
Harbor tugboat	Auxiliary	0.3	0.3	0.3	8.3	0.0	6.7	1.3	735
	Propulsion	2.1	2.0	2.1	61.3	0.1	46.7	6.6	4,974
Harbor tugboat Total		**2.4**	**2.3**	**2.4**	**69.6**	**0.1**	**53.3**	**7.9**	**5,709**
Work boat	Auxiliary	0.0	0.0	0.0	0.3	0.0	0.2	0.1	27
	Propulsion	0.1	0.1	0.1	3.1	0.0	2.9	0.4	333
Work boat Total		**0.1**	**0.1**	**0.1**	**3.4**	**0.0**	**3.1**	**0.5**	**360**
Harbor Craft Total		**19.6**	**18.1**	**19.6**	**597.2**	**0.6**	**444.2**	**66.1**	**50,171**

Operational Profiles

Table 3.2 lists the harbor craft engine count by USEPA marine engine emissions standards tier level and engine type in 2020. In 2020, a Tier 4 tugboat is included in the annual POLB EI for the first time.

Table 3.2: 2020 Harbor Craft Engine Tier Count

Engine Tier	Auxiliary Engine Count	Propulsion Engine Count	Total Engine Count
Unknown	2	0	2
Tier 0	2	2	4
Tier 1	2	12	14
Tier 2	39	117	156
Tier 3	97	44	141
Tier 4	0	2	2
Total	**142**	**177**	**319**

Table 3.3 summarizes the energy consumption (kWh) per engine tier for 2020 harbor craft that operated at the port. The kWh for engines with unknown tier are distributed in the various tiers based on the default model year and/or kilowatts used to estimate emissions of unknowns. For 2020, 92% of the energy consumed by San Pedro Bay harbor craft is with Tier 2 to Tier 4 engines.

Table 3.3: Harbor Craft Energy Consumption by Engine Tier, kWh and %

Engine Tier	2020 kWh	2020 % of Total
Tier 0	50,591	0.1%
Tier 1	6,264,725	8.3%
Tier 2	41,459,520	54.6%
Tier 3	26,639,253	35.1%
Tier 4	1,476,890	1.9%
Total	**75,890,979**	**100%**

Tables 3.4 and 3.5 summarize the characteristics of main and auxiliary engines, respectively, by vessel type operating at the Port in 2020. Averages of the model year, horsepower, or operating hours are used as default values when specific data is not available. Defaults were only used for 0.3% of model year values (one auxiliary engine), 0.3% of horsepower values (one auxiliary engine), and 3% of operating hours (four propulsion engines and 5 auxiliary engines). Several companies operate harbor craft in the harbors of both the Ports of Long Beach and Los Angeles. The activity hours for the vessels that are common to both ports reflect work performed during 2020 within the Port of Long Beach harbor only. For harbor vessels that share the work at both Ports in San Pedro Bay, the total hours are divided equally between the two ports.

Table 3.4: 2020 Propulsion Engine Characteristics by Harbor Craft Type

			Propulsion Engines								
Harbor	Vessel	Engine	Model year			Horsepower			Annual Operating Hours		
Craft Type	Count	Count	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
Assist tugboat	13	26	2007	2019	2011	1,850	3,433	2,419	637	2,133	1,223
Crew boat	17	43	2003	2016	2009	290	1,450	617	69	1,754	708
Excursion	8	14	1980	2012	2006	165	500	378	50	2,149	846
Ferry	12	26	2008	2015	2010	180	2,680	1,851	54	1,384	637
Government	5	10	2009	2016	2013	803	2,012	1,386	435	1,944	1,254
Ocean tugboat	6	12	2004	2015	2008	1,800	3,385	2,168	250	2,384	1,293
Harbor tugboat	19	37	2004	2018	2010	300	3,400	1,227	59	3,000	670
Work boat	5	9	2008	2015	2011	210	671	477	155	768	403
Total	**85**	**177**									

Table 3.5: 2020 Auxiliary Engine Characteristics by Harbor Craft Type

			Auxiliary Engines								
Harbor	Vessel	Engine	Model year			Horsepower			Annual Operating Hours		
Craft Type	Count	Count	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
Assist tugboat	13	27	2006	2019	2014	107	296	195	494	2,382	1,265
Crew boat	17	22	2002	2018	2010	13	180	66	128	2,476	805
Excursion	8	8	1980	2012	2005	43	90	60	100	2,800	1,290
Ferry	12	18	2008	2017	2011	18	120	67	204	1,530	691
Government	5	13	2009	2019	2013	15	2012	799	130	3,020	935
Ocean tugboat	6	13	2004	2019	2009	60	339	139	250	1,500	1,058
Harbor tugboat	19	33	2004	2019	2010	15	402	142	11	3,553	647
Work boat	5	8	1979	2015	2004	40	101	70	332	563	448
Total	**85**	**142**									

SECTION 4 CARGO HANDLING EQUIPMENT

Source Description

Cargo handling equipment (CHE) typically operate at Port terminals or railyards to move cargo such as containers, general cargo, and bulk cargo to and from marine vessels, railcars, and on-road trucks. The majority of CHE are composed of off-road equipment not designed to operate on public roadways. This inventory includes CHE powered by engines fueled by diesel, gasoline, propane or electricity.

Emissions Estimation Methodology

The emissions calculation methodology used to estimate CHE emissions is consistent with CARB's latest methodology for estimating emissions from CHE.[10] For the newer diesel on-road engines within a certain horsepower range, the NO_x emission rates were updated based on discussions with CARB. The methodology to estimate emissions from CHE is described in Section 4 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 2[11].

Geographical Domain

Emissions are estimated for CHE operating within Port terminals and facilities.

Data and Information Acquisition

The maintenance and/or CHE operating staff of each terminal were contacted to obtain equipment count and activity information on the CHE specific to their terminal or facility operations for the 2020 calendar year.

[10]CARB, Appendix B: Emission Estimation Methodology for Cargo Handling Equipment Operating at Ports and Intermodal Rail Yards in California at *www.arb.ca.gov/regact/2011/cargo11/cargoappb.pdf*, viewed 22 July 2017
[11]San Pedro Bay Ports Emissions Inventory Methodology Report, Version 2, *www.polb.com/environment/air/#emissions-inventory*

Emission Estimates

A summary of CHE emissions by terminal type is presented in Table 4.1.

Table 4.1: 2020 CHE Emissions by Terminal Type, tons and metric tons

Terminal Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Auto	0.0	0.0	0.0	0.0	0.0	0.2	0.0	12
Break-Bulk	0.2	0.1	0.1	6.7	0.0	12.1	0.8	2,852
Container	4.0	3.6	2.7	231.9	1.4	714.5	27.9	116,638
Cruise	0.0	0.0	0.0	0.1	0.0	2.1	0.0	96
Dry Bulk	0.1	0.1	0.1	4.9	0.0	8.1	1.4	494
Liquid	0.0	0.0	0.0	0.5	0.0	1.1	0.1	42
Other	0.0	0.0	0.0	0.6	0.0	4.1	0.2	927
Total	**4.3**	**3.9**	**2.9**	**244.8**	**1.4**	**742.2**	**30.5**	**121,060**

Table 4.2 presents the CHE emissions by equipment and engine type. Emissions from boom lifts are included in the miscellaneous propane category. Emissions from rail car movers are included under the miscellaneous diesel category.

Table 4.2: 2020 CHE Emissions by Equipment Type, tons and metric tons

Port Equipment	Engine Type	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Bulldozer	Diesel	0.0	0.0	0.0	0.9	0.0	0.2	0.1	95
Cone vehicle	Diesel	0.0	0.0	0.0	0.8	0.0	1.4	0.1	127
Crane	Diesel	0.0	0.0	0.0	0.1	0.0	0.1	0.0	15
Excavator	Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Forklift	Diesel	0.1	0.1	0.1	7.2	0.0	10.7	0.7	2,008
Forklift	Gasoline	0.0	0.0	0.0	0.3	0.0	5.9	0.1	180
Forklift	Propane	0.0	0.0	0.0	4.9	0.0	16.1	1.6	482
Loader	Diesel	0.1	0.1	0.1	1.8	0.0	3.9	0.5	1,637
Man lift	Diesel	0.0	0.0	0.0	0.2	0.0	0.4	0.0	63
Man lift	Gasoline	0.0	0.0	0.0	0.0	0.0	0.2	0.0	52
Material handler	Diesel	0.0	0.0	0.0	1.4	0.0	0.5	0.1	244
Miscellaneous	Diesel	0.0	0.0	0.0	0.1	0.0	0.1	0.0	7
Rail pusher	Diesel	0.0	0.0	0.0	0.2	0.0	0.2	0.0	64
Hybrid RTG	Diesel	0.0	0.0	0.0	0.7	0.0	3.0	0.3	1,222
RTG crane	Diesel	0.5	0.5	0.5	63.6	0.1	16.6	3.9	7,647
Side handler	Diesel	0.0	0.0	0.0	0.4	0.0	0.3	0.0	135
Skid steer loader	Diesel	0.0	0.0	0.0	0.1	0.0	0.1	0.0	22
Sweeper	Diesel	0.0	0.0	0.0	1.4	0.0	1.6	0.1	541
Sweeper	Propane	0.0	0.0	0.0	0.1	0.0	0.3	0.0	21
Top handler	Diesel	1.1	1.0	1.1	101.7	0.5	94.7	14.3	44,262
Tractor	Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Tractor	Propane	0.0	0.0	0.0	0.1	0.0	1.7	0.0	39
Truck	Diesel	0.1	0.1	0.1	3.0	0.0	2.2	0.3	1,052
Yard tractor	Diesel	0.9	0.8	0.9	48.2	0.6	143.7	7.6	46,292
Yard tractor	Gasoline	1.3	1.2	0.0	7.6	0.2	438.3	0.7	14,897
Yard tractor	Propane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Total		**4.3**	**3.9**	**2.9**	**244.8**	**1.4**	**742.2**	**30.5**	**121,060**

Operational Profiles

Table 4.3 is a summary of all the CHE engines by fuel type, including electric equipment. In 2020, there were a total of 1,454 CHE of which 16% are electric, 8% are powered by propane engines, 11% are powered by gasoline engines, and 65% are powered by diesel engines. Further details of the 2020 pieces of electric equipment are listed in Table 4.4.

Table 4.3: 2020 CHE Engines by Fuel Type

Equipment	Electric	Propane	Gasoline	Diesel	Total
Forklift	8	97	24	110	239
RTG crane	0	0	0	56	56
Side handler	0	0	0	7	7
Top handler	2	0	0	192	194
Yard tractor	6	2	135	505	648
Sweeper	1	8	0	12	21
Other	218	7	2	62	289
Total	**235**	**114**	**161**	**944**	**1,454**
Percent of Total	**16%**	**8%**	**11%**	**65%**	

Table 4.4: 2020 Electric Equipment Count

Equipment	2020 Electric Count
Automated guided vehicle	72
Automatic stacking crane	55
Crane	6
Electric pallet jack	2
Forklift	8
Man Lift	2
Material handler	1
Ship to shore crane	74
Sweeper	1
Top handler	2
Truck	6
Yard tractor	6
Total	**235**

Table 4.5 summarizes the characteristics of fossil fueled (i.e. diesel, gasoline, and propane) CHE data collected for the 2020 calendar year. The average values shown in the following tables are population-weighted and are used as default. For equipment without specific operational information available, default values associated with the specific equipment and engine type are used. Defaults were used for 1% of model year values, 6% of horsepower values, and 1% of operating hour values.

Table 4.5: 2020 Engine Characteristics for Fossil Fueled CHE Operating at the Port

Equipment	Engine Type	Count	Power (hp)			Model Year			Annual Operating Hours		
			Min	Max	Average	Min	Max	Average	Min	Max	Average
Bulldozer	Diesel	1	200	200	200	2004	2004	2004	1,500	1,500	1,500
Cone vehicle	Diesel	5	35	35	35	2016	2016	2016	1,638	3,599	2,479
Crane	Diesel	2	173	334	254	1985	2016	2000	30	282	156
Excavator	Diesel	2	322	371	347	2002	2005	2003			
Forklift	Diesel	110	43	382	170	1995	2019	2013	10	5,146	651
Hybrid RTG crane	Diesel	20	169	250	229.75	2016	2019	2016	413	2,938	2,185
Loader	Diesel	16	50	420	271	1985	2020	2013	27	3,000	1,041
Man Lift	Diesel	13	48	100	73	2000	2017	2010	2	761	220
Material handler	Diesel	2	371	717	544	2005	2008	2006	350	825	588
Miscellaneous	Diesel	2	13	13	13	2010	2010	2010	54	1,705	880
Rail pusher	Diesel	3	150	260	202	2013	2013	2013	250	612	394
RTG crane	Diesel	36	515	1,043	677	1998	2020	2006	12	5,278	3,042
Side handler	Diesel	7	205	205	205	2000	2017	2005	84	1,397	486
Skid steer loader	Diesel	2	67	67	67	2011	2015	2013	500	537	519
Sweeper	Diesel	12	34	300	169	2002	2019	2013	20	1,886	720
Top handler	Diesel	192	250	388	343	2000	2020	2012	16	4,370	1,972
Tractor	Diesel	1	59	59	59	2009	2009	2009	80	80	80
Truck	Diesel	13	270	525	440	2009	2016	2012	222	1,607	981
Yard tractor	Diesel	505	164	225	199	2013	2020	2017	198	3,205	1,898
Forklift	Gasoline	24	59	72	64	2002	2016	2012	167	1,021	506
Man Lift	Gasoline	2	82	82	82	2000	2004	2002	42	100	71
Yard tractor	Gasoline	135	335	335	335	2011	2020	2014	46	2,333	1,159
Forklift	Propane	97	45	141	75	1987	2018	2006	7	1,500	381
Sweeper	Propane	8	47	135	72	1982	2016	2007	20	200	79
Tractor	Propane	7	57	101	95	1996	1997	1996	2	200	159
Yard tractor	Propane	2	173	173	173	2009	2009	2009	18	40	29
Total		**1,219**									

Table 4.6 is a summary of the emission reduction technologies[12] utilized in cargo handling equipment as retrofits to existing equipment, including diesel particulate filters (DPF) and BlueCAT retrofit for large-spark ignition (LSI) engines. Hybrid equipment and on-road engine counts have been included to the table also.

Table 4.6: 2020 CHE Emission Reduction Technologies by Equipment Type

Equipment	Hybrid Equipment	On-Road Engines	ULSD Fuel	DPF Retrofit	BlueCAT Retrofit
Forklift	0	0	110	17	16
RTG crane	20	0	56	16	0
Side handler	0	0	7	6	0
Top handler	0	0	192	38	0
Yard tractor	0	267	505	0	0
Sweeper	0	0	12	0	0
Other	0	4	62	4	7
Total	**20**	**271**	**944**	**81**	**23**

Table 4.7 summarizes the distribution of diesel-powered CHE equipped with off-road diesel engines by USEPA non-road engine emission standards tier level. The table also includes on-road diesel engines. On-road engines are generally lower in emissions than the off-road engines of the same model year.

Table 4.7: 2020 Count of Diesel-Powered CHE by Type and Engine Emission Standard

Equipment Type	Unknown Tier	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4i	Tier 4f	On-road	Total Diesel
Yard tractor	0	0	0	0	0	1	237	267	505
Forklift	10	3	3	12	5	15	62	0	110
Top handler	30	0	2	27	6	61	66	0	192
Other	14	2	1	4	6	8	23	4	62
RTG crane	1	0	20	0	0	13	22	0	56
Side handler	0	0	2	2	2	0	1	0	7
Sweeper	3	0	1	2	0	0	6	0	12
Total	**58**	**5**	**29**	**47**	**19**	**98**	**417**	**271**	**944**
Percent of Total	**6%**	**1%**	**3%**	**5%**	**2%**	**10%**	**44%**	**29%**	

[12] *www.arb.ca.gov/diesel/verdev/vt/cvt.htm*

Table 4.8 summarizes the energy consumption (kWh) for all of the equipment by engine tier. For diesel equipment, the equipment with higher tier levels (newer equipment) and those with on-road engines are generally used more than older equipment, which contributes to reduced emissions due to cleaner engine standards in newer equipment. In 2020, 81% of the energy consumed was by equipment with Tier 4i, Tier 4f, and on-road engines.

Table 4.8: Equipment Energy Consumption by Engine Type and Diesel Engine Standard, kWh and %

Engine Type	Engine Tier	kWh	% of Total
Diesel	Tier 0	37,506	0.02%
Diesel	Tier 1	5,366,775	4%
Diesel	Tier 2	5,455,806	4%
Diesel	Tier 3	1,947,016	1%
Diesel	Tier 4i	26,480,555	17%
Diesel	Tier 4f	60,990,523	40%
Diesel	Onroad	37,011,823	24%
Gasoline		15,203,199	10%
Propane		602,366	0.39%
Total		**153,095,569**	**100%**

SECTION 5 RAILROAD LOCOMOTIVES

Source Description

Railroad locomotives are used to move trains transporting intermodal (containerized) freight and lesser amounts of dry bulk, liquid bulk, and carload (boxcar) freight to, from, and within the Port. Railroad locomotive activities at the Port consist of two different types of operations: the initiation or termination of long-distance cargo movements, known as line haul, and the short-distance movement of rail cars, such as the assembling and disassembling of trains in and around the Port, known as switching.

Rail operators Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) provide line haul service to and from the Port and operate switching services at their off-port locations. Pacific Harbor Line (PHL) performs most of the switching operations within the Port.

Emissions Estimation Methodology

The methodology used to estimate 2020 emissions from rail locomotives closely follows the methodology as described in Section 5 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 2[13].

Geographical Domain

Emissions from railroad locomotives are estimated for movements of cargo by rail locomotives within Port boundaries, directly to or from port-owned properties such as terminals and on-port rail yards, or to and from the SoCAB boundary. 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. Figure 1.1 in Section 1 of this report illustrates the geographical domain.

[13]San Pedro Bay Ports Emissions Inventory Methodology Report, Version 2, *www.polb.com/environment/air/#emissions-inventory*

Data and Information Acquisition

Information from the following general sources was used to estimate emissions associated with Port-related activities of locomotives:

- Previous emissions studies
- Port cargo statistics
- Input from railroad operators
- Published information sources
- California Air Resources Board Memorandum of Understanding (CARB MOU)[14] 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 5.1 lists the number of locomotives of each tier level that were operated in 2020, 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 2.

Table 5.1: PHL Switching Fleet Mix, 2020

Locomotive Tier Level /Power Type	Count	% of Fuel Consumed
Genset	6	5%
Tier 3	0	0%
Tier 3+	17	93%
Tier 4	1	3%
Totals	**24**	**100%**

[14] *www.arb.ca.gov/resources/documents/rail-emission-reduction-agreements*
The 1998 Locomotive NO_x Fleet Average Emissions Agreement in the South Coast Air Basin, signed by CARB, Union Pacific Railroad (UP) and BNSF Railway (BNSF), accelerated the introduction of cleaner locomotives into the South Coast Air Basin. Under the Agreement, UP and BNSF agreed to operate locomotive fleets that "on average" meet a Tier 2 NO_x emission standard, or 5.5 g/bhp-hr by 2010 (and through 2030). The railroads submit detailed information on the locomotives operated in the SoCAB to demonstrate compliance with the agreement.

Emission Estimates

A summary of estimated emissions from locomotive operations related to the Port is presented in Table 5.2.

Table 5.2: 2020 Locomotive Emissions, tons and metric tons

Activity Component	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
On-Port Emissions								
Switching	0.2	0.2	0.2	20.7	0.0	7.9	1.2	2651
Line Haul	5.5	5.1	5.5	141.8	0.1	32.6	8.2	11,427
On-Port Subtotal	5.8	5.3	5.8	162.5	0.2	40.5	9.4	14,078
Off-Port (Regional) Emissions								
Switching	0.1	0.1	0.1	3.5	0.0	1.6	0.0	549
Line Haul	14.4	13.3	14.4	370.1	0.3	85.2	21.3	29,826
Off-Port Subtotal	14.5	13.4	14.5	373.7	0.3	86.8	21.3	30,375
Total	**20.3**	**18.7**	**20.3**	**536.2**	**0.5**	**127.3**	**30.7**	**44,454**

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 2.

Table 5.3 presents the CARB MOU compliance information submitted annually by BNSF and UP on pre-Tier 0 through Tier 4 locomotive fleet composition, showing a weighted average NO_x emission factor of 5.56 g/bhp-hr.[15] The 2019 reports were used instead of 2020 because of the timing of the inventory data collection phase and of the posting of the compliance reports by CARB. The ultra-low emission locomotives (ULEL) are also included in the table but are not used in developing the line haul emission factors because the ULELs are believed to all be in switching service.

[15]Notes from railroads' MOU compliance submissions:
1. For more information on the U.S. EPA locomotive emission standards, *www.epa.gov/oms/locomotives.htm.*
2. Number of locomotives is the sum of all individual locomotives that visited or operated within the SCAB at any time during 2018.

Table 5.3: CARB MOU Compliance Data, Megawatt-hours (MWh) and g NO_x/bhp-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	30	1,150	0.4%	13.0	0.05
Tier 0	198	11,007	4.0%	8.4	0.34
Tier 1	1,797	98,968	36%	6.1	2.21
Tier 2	1,630	97,310	36%	4.7	1.68
Tier 3	1,210	52,724	19%	3.8	0.74
Tier 4	280	11,418	4.2%	1.1	0.05
ULEL	0	0	0%	-	-
Total BNSF	**5,145**	**272,577**	**100%**		**5.07**
UP					
Pre-Tier 0	19	339	0.2%	9.0	0.01
Tier 0	1,135	31,784	15%	8.5	1.25
Tier 1	2,267	75,251	35%	7.3	2.55
Tier 2	1,545	62,369	29%	5.1	1.47
Tier 3	914	35,882	17%	5	0.83
Tier 4	192	10,096	4.7%	1.1	0.05
ULEL	0	0	0%		0.00
Total UP	**6,072**	**215,721**	**100%**		**6.16**
		ULEL Credit Used			0.70
		UP Fleet Average			**5.46**
Both RRs, excluding ULELs and ULEL credits					
Pre-Tier 0	49	1,489	0%	12.1	0.04
Tier 0	1,333	42,791	9%	8.5	0.74
Tier 1	4,064	174,219	36%	6.6	2.36
Tier 2	3,175	159,679	33%	4.9	1.59
Tier 3	2,124	88,606	18%	4.3	0.78
Tier 4	472	21,514	4.41%	1.1	0.049
Total both	**11,217**	**488,298**	**100%**		**5.56**

Emission factors for particulate matter (PM_{10}), HC, and CO were calculated using the tier-specific emission rates for those pollutants published by USEPA[16] to develop weighted average emission factors using the MWh figures provided in the railroads' submissions. These results are presented in Table 5.4.

Table 5.4: Fleet MWh and PM, HC, CO Emission Factors, g/hp-hr

Engine		% of	EPA Tier-specific			Fleet Composite		
Tier	MWh	MWh	PM_{10}	HC	CO	PM_{10}	HC	CO
			g/bhp-hr			g/bhp-hr		
Pre-Tier 0	1,489	0%	0.32	0.48	1.28	0.001	0.00	0.00
Tier 0	42,791	9%	0.32	0.48	1.28	0.028	0.04	0.11
Tier 1	174,219	36%	0.32	0.47	1.28	0.114	0.17	0.46
Tier 2	159,679	33%	0.18	0.26	1.28	0.059	0.09	0.42
Tier 3	88,606	18%	0.08	0.13	1.28	0.015	0.02	0.23
Tier 4	21,514	4%	0.015	0.04	1.28	0.000	0.00	0.06
Totals	**488,298**	**100%**				**0.217**	**0.32**	**1.28**

Emission factors for $PM_{2.5}$ and DPM were calculated as fractions of PM_{10}, with $PM_{2.5}$ calculated as 94% of PM_{10} consistent with CARB methodology and DPM equal to PM_{10} because 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. Table 5.5 summarizes the emission factors for line haul locomotives, presented in units of g/bhp-hr.

Table 5.5: 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	0.217	0.200	0.217	5.56	0.005	1.28	0.32	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 Activity

As described in the San Pedro Bay Ports Emissions Inventory Methodology Report, estimates of the number of trains per year, locomotives per train, and on-port hours per train are multiplied together to calculate total locomotive hours per year. This activity information for 2020 is summarized in Table 5.6.

Table 5.6: 2020 Estimated On-Port Line Haul Locomotive Activity

Activity Measure	Inbound	Outbound	Total
Trains per Year	2,116	1,908	4,024
Locomotives per Train	3	3	N/A
Hours on Port per Trip	1	2.5	N/A
Locomotive Hours per Year	6,348	14,310	20,658

Out-of-Port Line Haul Activity

Table 5.7 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. Fuel consumption is calculated by multiplying gross ton-miles by the average fuel consumption factor of 0.965 gallons per thousand gross ton-miles. [17] Overall horsepower hours are calculated by multiplying the fuel used by the fuel consumption conversion factor of 20.8 hp-hr/gal.

Table 5.7: 2020 Gross Ton-Mile, Fuel Use, and Horsepower-hour Estimate

	Distance miles	Trains per year	MMGT per year	MMGT-miles per year
Alameda Corridor	21	3,865	29	609
Central LA to Air Basin Boundary	84	3,865	29	2,436
Million gross ton-miles				**3,045**
Estimated gallons of fuel (millions)				**2.94**
Estimated million horsepower-hours				**64.1**

[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, https://prod.stb.gov/reports-data/economic-data/annual-report-financial-data/*

SECTION 6 HEAVY-DUTY VEHICLES

Source Description

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

The majority of trucks that service the Port's terminals 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.

Emissions Estimation Methodology

The methodology used to estimate 2020 emissions from HDVs is described in Section 6 of the San Pedro Bay Ports Emissions Inventory Methodology Report Version 2.[18] HDV emission estimates are based on estimates of vehicle miles traveled (VMT), average speeds, CARB's on-road vehicle Emission Factors model (EMFAC) 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.

Geographical Domain

The two major geographical components of truck activities evaluated for this inventory are:

- **On-terminal operations**, which include waiting for terminal entry, transiting the terminal to drop off and/or pick up cargo, and departing the terminals.

- **On-road operations**, consisting 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 Los Angeles (POLA). The activity of on-road trucks included within the geographical domain is from the Port to the cargo's first point of rest within SoCAB or up to the basin boundary, whichever comes first.

[18]San Pedro Bay Ports Emissions Inventory Methodology Report, Version 2, *www.polb.com/environment/air/#emissions-inventory*

Data and Information Acquisition

Information regarding the activity of trucks while they are on terminal, such as average times and distances traveled through the terminal, is collected during in-person and/or telephone interviews with terminal personnel. For on-road operations, the volumes (number of trucks), distances, and average speeds on roadway segments between defined intersections are estimated using trip generation and travel demand models that have been developed for these purposes. The trip generation model is used to develop truck trip numbers for container terminals, while the terminal interviews are used to obtain trip counts associated with non-container terminals.

The model year distribution of HDVs operating at the Port is developed using radio frequency identification (RFID) call information gathered at the Port and POLA container terminals and truck/engine model year data from the Port Drayage Truck Registry (PTDR). The RFID call information is only collected at container terminals, so it is assumed for the inventory that trucks calling at other Port terminals have the same general distribution of model years.

Emission Estimates

Tables 6.1 through 6.3 summarize the vehicle miles traveled and emissions associated with overall HDV activity, emissions associated with container terminal activity, and emissions associated with other Port terminals, respectively.

Table 6.1: 2020 HDV Emissions, tons and metric tons

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 MT
On-Terminal	4,908,691	0.2	0.2	0.2	149	0.3	116.9	16.1	37,380
On-Road	208,199,609	5.7	5.4	5.6	903	3.3	151.9	25.8	349,610
Total	**213,108,300**	**5.8**	**5.6**	**5.8**	**1,052**	**3.7**	**268.8**	**41.9**	**386,990**

Table 6.2: 2020 HDV Emissions Associated with Container Terminals, tons and metric tons

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 MT
On-Terminal	4,849,860	0.2	0.2	0.2	147	0.3	115.6	15.9	36,934
On-Road	196,229,603	5.3	5.1	5.3	851	3.2	143.2	24.3	329,510
Total	**201,079,463**	**5.5**	**5.3**	**5.5**	**998**	**3.5**	**258.7**	**40.2**	**366,443**

Table 6.3: 2020 HDV Emissions Associated with Non-Container Port Terminals, tons and metric tons

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 MT
On-Terminal	58,831	0.002	0.002	0.002	2	0.004	1.3	0.2	447
On-Road	11,970,006	0.3	0.3	0.3	52	0.2	8.7	1.5	20,100
Total	**12,028,836**	**0.3**	**0.3**	**0.3**	**54**	**0.2**	**10.1**	**1.7**	**20,547**

Operational Profiles

To estimate the 2020 emissions from HDVs, operational profiles were developed for on-terminal truck activity using data and information collected from terminal operators. The on-road truck activity profiles were developed using trip generation and travel demand models to estimate the number of on-road VMT.

The model year distribution of HDVs was determined using RFID information collected at Port terminals to track the number of truck calls, and truck model year information from the PDTR. The distribution of the model years of the trucks that called at the Port and at the Port of Los Angeles terminals during 2020 is presented in Figure 6.1. The call weighted average age of the trucks in 2020 was approximately 7 years.

Figure 6.1: 2020 Model Year Distribution of HDV Fleet

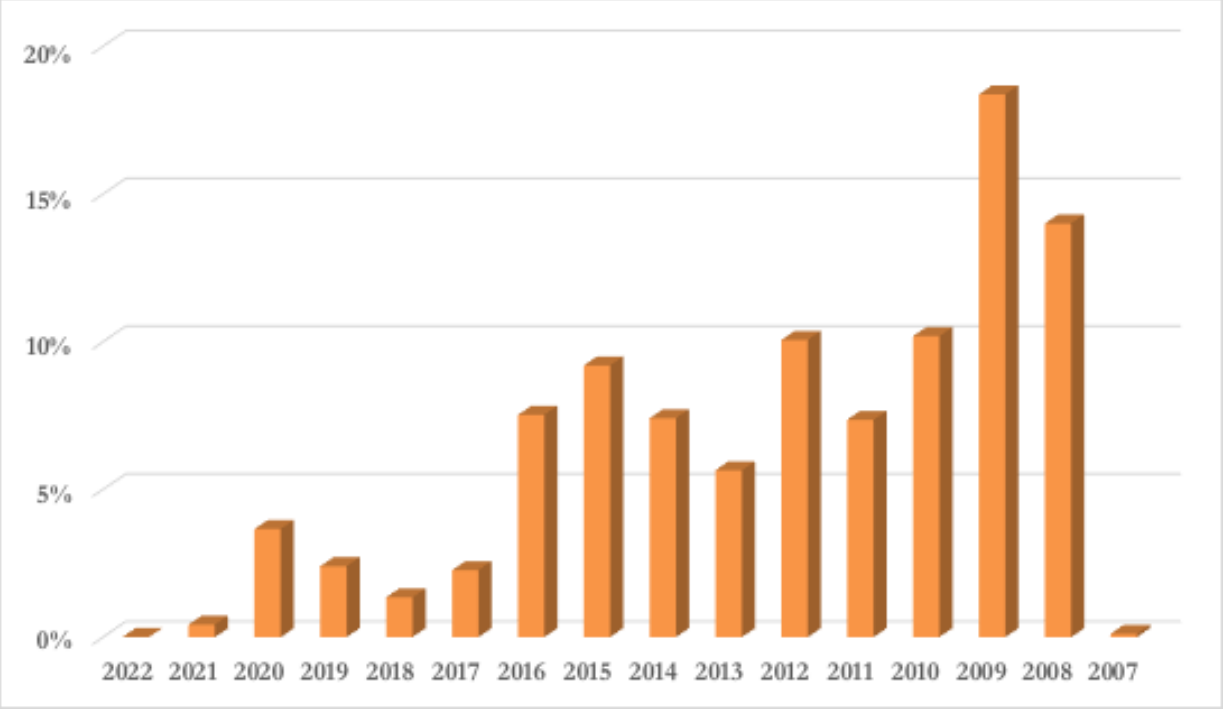


Table 6.4 shows the range and average of reported operating characteristics of on-terminal truck activities at Port container terminals, while Table 6.5 shows the same summary data for non-container terminals and facilities.

Table 6.4: 2020 Summary of Reported Container Terminal Operating Characteristics

	Speed (mph)	Distance (miles)	Gate In (hours)	Unload/Load (hours)	Gate Out (hours)
Maximum	15	3.5	0.30	0.84	0.18
Minimum	7	0.5	0.03	0.40	0.00
Average	10	1.4	0.16	0.60	0.07

Table 6.5: 2020 Summary of Reported Non-Container Facility Operating Characteristics

	Speed (mph)	Distance (miles)	Gate In (hours)	Unload/Load (hours)	Gate Out (hours)
Maximum	10	0.5	0.08	0.50	0.08
Minimum	5	0.0	0.00	0.00	0.00
Average	7	0.2	0.01	0.09	0.01

In 2020, a total 3,685,465 truck calls were associated with container terminals and 317,139 truck calls were associated with non-container facilities. The total number of truck calls associated with container terminals is estimated by the trip generation model on which truck travel VMT estimates are based, while non-container terminal truck calls were obtained from the terminal operators. The non-container terminal number includes activity at the Port's temporary empty container depot and chassis support facilities that operated in 2020, totaling approximately 95,000 calls. The chassis yards are used for pickup, delivery and maintenance of chassis.

Table 6.6 provides the on-terminal operating parameters, listing total estimated VMT and hours of idling on-terminal and waiting at entry gates. The idling times are likely to be over-estimated because the idling estimates are based on the entire time that trucks are on terminal (except for driving time), which does not account for times that trucks are turned off while on terminal. To date, there are no other known available data sources identified to provide a reliable estimate of the average percentage of time the trucks' engines are turned off while on terminal.

Table 6.6: 2020 Estimated On-Terminal VMT and Idling Hours by Terminal

Terminal Type	Total Miles Traveled	Total Hours Idling (all trips)
Container	2,193,408	457,482
Container	849,017	353,757
Container	767,269	1,033,255
Container	387,192	123,901
Container	379,671	622,660
Container	273,304	639,530
Auto	5,440	9,350
Break Bulk	3,500	2,940
Break Bulk	2,500	800
Break Bulk	1,500	0
Break Bulk	600	120
Break Bulk	20	0
Dry Bulk	12,920	680
Dry Bulk	1,132	906
Dry Bulk	396	229
Dry Bulk	40	440
Liquid Bulk	5,400	4,320
Liquid Bulk	3,125	375
Liquid Bulk	1,350	0
Other	11,557	9,824
Other	7,089	0
Other	2,261	6,407
Total	**4,908,691**	**3,266,977**

Table 6.7 summarizes the speed-specific composite emission factors developed from the EMFAC2021 model and the port-specific model year distribution. These composite emission factors are developed using model year specific emission factors for the T7 POLA vehicle category of EMFAC2021. They 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 6.7: 2020 Speed-Specific Composite Exhaust Emission Factor, g/hr and g/mi

Speed (mph)	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2	N_2O	CH_4	Units
0 (Idle)	0.0057	0.0055	0.0037	25.3384	0.0516	27.1457	3.1002	6,082	0.8982	0.6750	g/hr
5	0.0355	0.0339	0.0352	12.9219	0.0330	4.3541	1.2013	3,691	0.5912	0.4985	g/mi
10	0.0318	0.0304	0.0315	10.4890	0.0285	3.4697	0.8752	3,176	0.5082	0.3279	g/mi
15	0.0271	0.0260	0.0269	7.9551	0.0235	2.5107	0.5652	2,609	0.4168	0.1929	g/mi
20	0.0241	0.0231	0.0239	6.5259	0.0205	1.9222	0.4007	2,275	0.3633	0.1349	g/mi
25	0.0222	0.0212	0.0220	5.6270	0.0186	1.5186	0.2989	2,051	0.3273	0.1027	g/mi
30	0.0211	0.0202	0.0210	4.9551	0.0170	1.2114	0.2285	1,880	0.3000	0.0821	g/mi
35	0.0208	0.0199	0.0207	4.4357	0.0158	0.9728	0.1775	1,748	0.2788	0.0679	g/mi
40	0.0213	0.0203	0.0212	4.0530	0.0150	0.7908	0.1402	1,649	0.2630	0.0576	g/mi
45	0.0224	0.0214	0.0223	3.7950	0.0144	0.6569	0.1129	1,580	0.2519	0.0498	g/mi
50	0.0241	0.0231	0.0241	3.6581	0.0140	0.5644	0.0930	1,539	0.2453	0.0439	g/mi
55	0.0265	0.0253	0.0264	3.6395	0.0139	0.5087	0.0789	1,525	0.2429	0.0392	g/mi
60	0.0297	0.0284	0.0296	3.7771	0.0141	0.4961	0.0762	1,549	0.2467	0.0390	g/mi
65	0.0337	0.0322	0.0336	4.0575	0.0147	0.5047	0.0787	1,607	0.2558	0.0391	g/mi
70	0.0337	0.0322	0.0336	4.0761	0.0147	0.5049	0.0787	1,607	0.2558	0.0391	g/mi

SECTION 7 SUMMARY OF 2020 EMISSION RESULTS

The Port of Long Beach 2020 Air Emissions Inventory results are presented in this section. Table 7.1 summarizes the 2020 air emissions associated with the goods movement-related sources at the Port, by category.

Table 7.1: 2020 Emissions by Source Category, tons and metric tons

Category	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
Ocean going vessels	73	67	40	3,490	189	294	132	286,037
Harbor craft	20	18	20	597	1	444	66	50,171
Cargo handling equipment	4	4	3	245	1	742	31	121,060
Locomotives	20	19	20	536	0	127	31	44,453
Heavy-duty vehicles	6	6	6	1,052	4	269	42	386,990
Total	**123**	**113**	**89**	**5,920**	**195**	**1,876**	**301**	**888,712**

Table 7.2: 2020 Emissions Percent Contributions by Source Category

Source Category	DPM		NO_x		SO_x		CO_2e	
	tons	%	tons	%	tons	%	MT	%
Ocean going vessels	40	45%	3,490	59%	189	96.8%	286,037	32%
Harbor craft	20	22%	597	10%	1	0.3%	50,171	6%
Cargo handling equipment	3	3%	245	4%	1	0.7%	121,060	14%
Rail locomotives	20	23%	536	9%	0	0.3%	44,453	5%
Heavy-duty vehicles	6	7%	1,052	18%	4	1.9%	386,990	44%
Total	**89**	**100%**	**5,920**	**100%**	**195**	**100.0%**	**888,712**	**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. Due to rounding, the percentages may not total 100%.

Figure 7.1: 2020 PM_{10} Emissions in the South Coast Air Basin, %

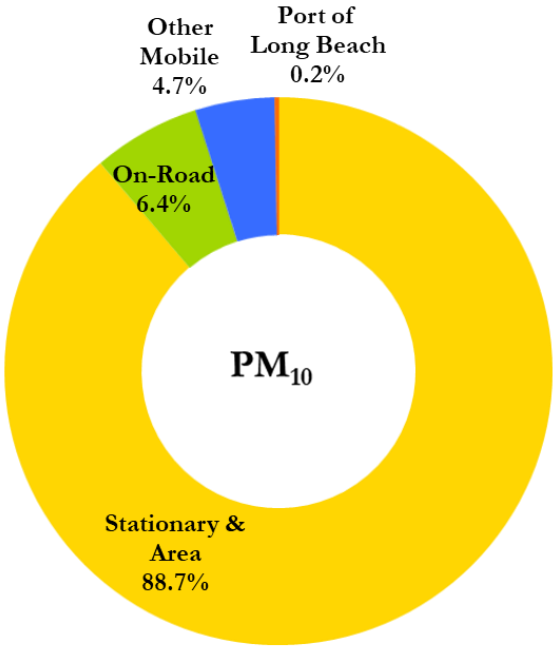


Figure 7.2: 2020 $PM_{2.5}$ Emissions in the South Coast Air Basin, %

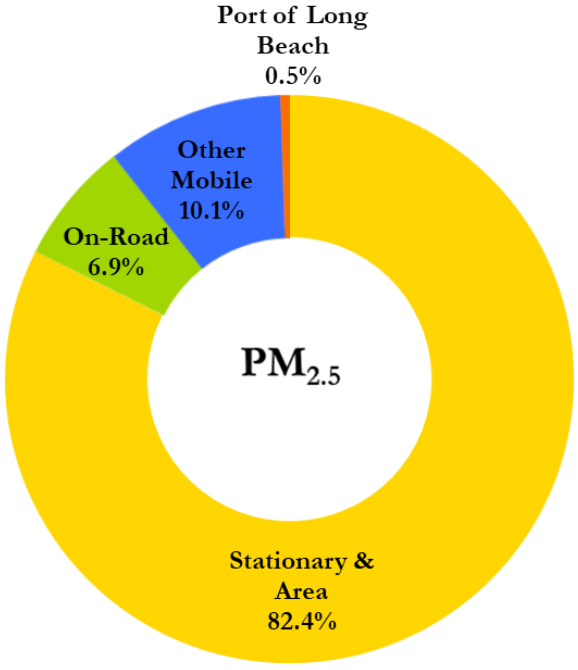


Figure 7.3: 2020 DPM Emissions in the South Coast Air Basin, %

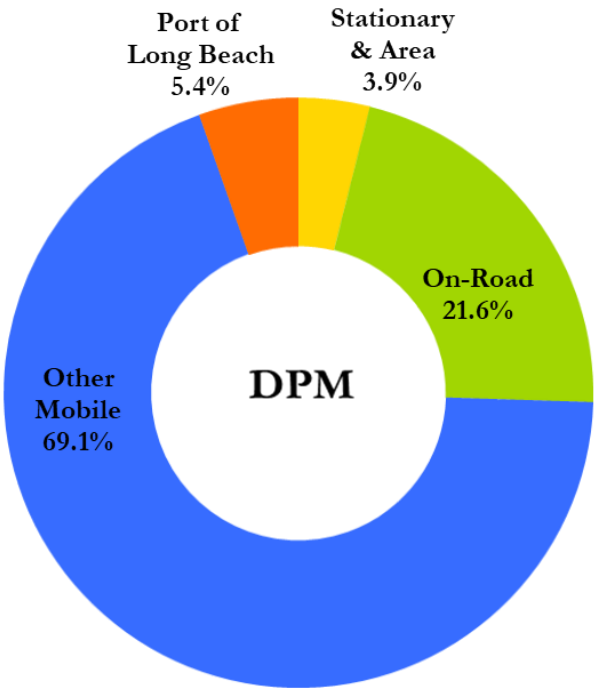


Figure 7.4: 2020 NO_x Emissions in the South Coast Air Basin, %

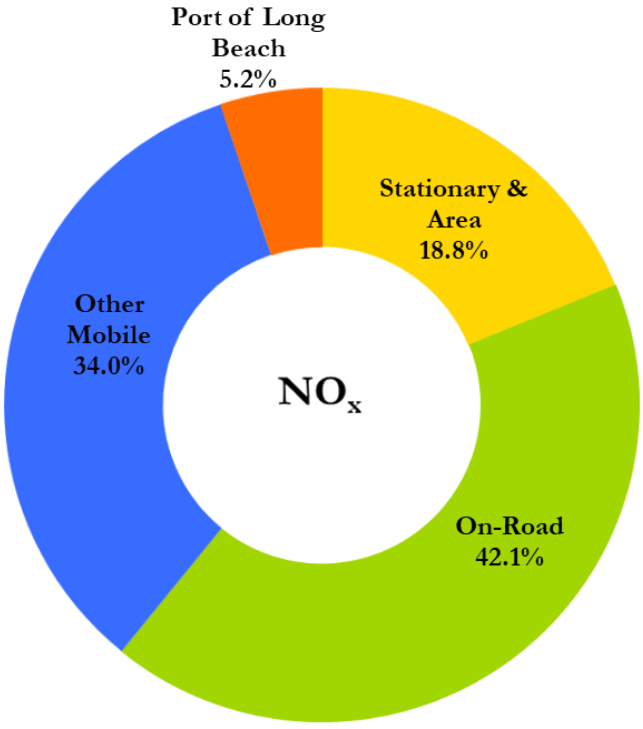
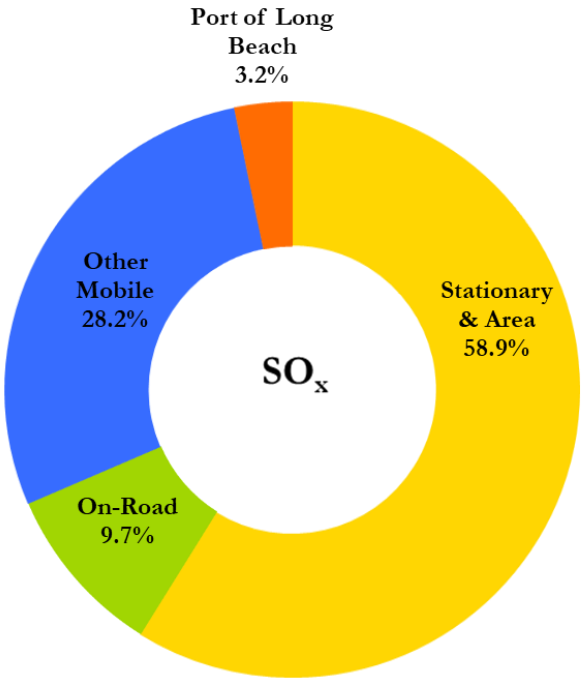


Figure 7.5: 2020 SO_x Emissions in the South Coast Air Basin, %



Tables 7.3 through 7.8 list the percent emissions contribution. The 2020 SoCAB emissions are based on the 2016 AQMP Appendix III[19], except for the SoCAB on-road emission estimates which were updated to take into consideration EMFAC2021[20]. Thus, the 2020 SoCAB total emissions shown on the bottom row of the tables do not exactly match 2016 AQMP Appendix III values. It should be noted that SoCAB on-road heavy-duty diesel PM_{10} and $PM_{2.5}$ emissions do not include brake and tire wear emissions consistent with the Port's HDV emissions.

[19]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.
[20]ARB, *www.arb.ca.gov/emfac/*

Table 7.3: 2020 PM_{10} Emissions Contribution, tons and %

Category	Subcategory	PM_{10}	Percent PM_{10} Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	2	3%	1%	0.00%
OGV	Bulk vessel	4	5%	3%	0.01%
OGV	Containership	30	42%	25%	0.06%
OGV	Cruise	3	5%	3%	0.01%
OGV	General cargo	1	1%	1%	0.00%
OGV	Ocean tugboat	0	0%	0%	0.00%
OGV	Miscellaneous	1	1%	0%	0.00%
OGV	RoRo	1	2%	1%	0.00%
OGV	Tanker	30	42%	25%	0.06%
OGV	**Subtotal**	**73**	**100%**	**59%**	**0.14%**
Harbor Craft	Assist tug	5	24%	4%	0.01%
Harbor Craft	Harbor tug	2	12%	2%	0.00%
Harbor Craft	Ferry	3	16%	2%	0.01%
Harbor Craft	Ocean tugboat	6	30%	5%	0.01%
Harbor Craft	Government	1	7%	1%	0.00%
Harbor Craft	Excursion	0	2%	0%	0.00%
Harbor Craft	Crewboat	2	9%	1%	0.00%
Harbor Craft	Work boat	0	0%	0%	0.00%
Harbor Craft	**Subtotal**	**20**	**100%**	**16%**	**0.04%**
CHE	RTG crane	1	13%	0%	0.00%
CHE	Forklift	0	4%	0%	0.00%
CHE	Top handler, side pick	1	26%	1%	0.00%
CHE	Other	0	6%	0%	0.00%
CHE	Yard tractor	2	51%	2%	0.00%
CHE	**Subtotal**	**4**	**100%**	**4%**	**0.01%**
Locomotives	Switching	0	1%	0%	0.00%
Locomotives	Line haul	20	99%	16%	0.04%
Locomotives	**Subtotal**	**20**	**100%**	**17%**	**0.04%**
HDV	On-Terminal	0.2	3%	0%	0.00%
HDV	On-road	5.7	97%	5%	0.01%
HDV	**Subtotal**	**6**	**100%**	**5%**	**0.01%**
Port	**Total**	**123**		**100%**	**0.2%**
SoCAB AQMP	**Total**	**52,984**			

Table 7.4: 2020 $PM_{2.5}$ Emissions Contribution, tons and %

Category	Subcategory	$PM_{2.5}$	Percent $PM_{2.5}$ Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	2	3%	1%	0.01%
OGV	Bulk vessel	4	5%	3%	0.02%
OGV	Containership	28	42%	25%	0.13%
OGV	Cruise	3	5%	3%	0.02%
OGV	General cargo	1	1%	1%	0.00%
OGV	Ocean tugboat	0	0%	0%	0.00%
OGV	Miscellaneous	1	1%	0%	0.00%
OGV	RoRo	1	2%	1%	0.01%
OGV	Tanker	28	42%	25%	0.13%
OGV	**Subtotal**	**67**	**100%**	**59%**	**0.32%**
Harbor Craft	Assist tug	4	24%	4%	0.02%
Harbor Craft	Harbor tug	2	12%	2%	0.01%
Harbor Craft	Ferry	3	16%	2%	0.01%
Harbor Craft	Ocean tugboat	5	30%	5%	0.03%
Harbor Craft	Government	1	7%	1%	0.01%
Harbor Craft	Excursion	0	2%	0%	0.00%
Harbor Craft	Crewboat	2	8%	1%	0.01%
Harbor Craft	Work boat	0	0%	0%	0.00%
Harbor Craft	**Subtotal**	**18**	**100%**	**16%**	**0.09%**
CHE	RTG crane	1	13%	0%	0.00%
CHE	Forklift	0	4%	0%	0.00%
CHE	Top handler, side pick	1	26%	1%	0.00%
CHE	Other	0	6%	0%	0.00%
CHE	Yard tractor	2	50%	2%	0.01%
CHE	**Subtotal**	**4**	**100%**	**3%**	**0.02%**
Locomotives	Switching	0	1%	0%	0.00%
Locomotives	Line haul	18	99%	16%	0.09%
Locomotives	**Subtotal**	**19**	**100%**	**17%**	**0.09%**
HDV	On-Terminal	0.2	3%	0%	0.00%
HDV	On-road	5.4	97%	5%	0.03%
HDV	**Subtotal**	**6**	**100%**	**5%**	**0.03%**
Port	**Total**	**113**		**100%**	**0.5%**
SoCAB AQMP	**Total**	**20,932**			

Table 7.5: 2020 DPM Emissions Contribution, tons and %

Category	Subcategory	DPM	Percent DPM Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	2	4%	2%	0.1%
OGV	Bulk vessel	3	7%	3%	0.2%
OGV	Containership	18	45%	21%	1.1%
OGV	Cruise	3	8%	3%	0.2%
OGV	General cargo	1	2%	1%	0.0%
OGV	Ocean tugboat	0	0%	0%	0.0%
OGV	Miscellaneous	0	1%	1%	0.0%
OGV	RoRo	0	0%	0%	0.0%
OGV	Tanker	13	32%	15%	0.8%
OGV	**Subtotal**	**40**	**100%**	**45%**	**2.5%**
Harbor Craft	Assist tug	5	24%	5%	0.3%
Harbor Craft	Harbor tug	2	12%	3%	0.1%
Harbor Craft	Ferry	3	16%	3%	0.2%
Harbor Craft	Ocean tugboat	6	30%	7%	0.4%
Harbor Craft	Government	1	7%	2%	0.1%
Harbor Craft	Excursion	0	2%	1%	0.0%
Harbor Craft	Crewboat	2	9%	2%	0.1%
Harbor Craft	Work boat	0	0%	0%	0.0%
Harbor Craft	**Subtotal**	**20**	**100%**	**22%**	**1.2%**
CHE	RTG crane	1	19%	1%	0.0%
CHE	Forklift	0	4%	0%	0.0%
CHE	Top handler, side pick	1	38%	1%	0.1%
CHE	Other	0	9%	0%	0.0%
CHE	Yard tractor	1	30%	1%	0.1%
CHE	**Subtotal**	**3**	**100%**	**3%**	**0.2%**
Locomotives	Switching	0	1%	0%	0.0%
Locomotives	Line haul	20	99%	23%	1.2%
Locomotives	**Subtotal**	**20**	**100%**	**23%**	**1.2%**
HDV	On-Terminal	0.2	3%	0%	0.0%
HDV	On-road	5.6	97%	6%	0.3%
HDV	**Subtotal**	**6**	**100%**	**7%**	**0.4%**
Port	**Total**	**89**		**100%**	**5.4%**
SoCAB AQMP	**Total**	**1,636**			

Table 7.6: 2020 NO_x Emissions Contribution, tons and %

Category	Subcategory	NO_x	Percent NO_x Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	124	4%	2%	0.1%
OGV	Bulk vessel	233	7%	4%	0.2%
OGV	Containership	1,793	51%	30%	1.6%
OGV	Cruise	196	6%	3%	0.2%
OGV	General cargo	54	2%	1%	0.0%
OGV	Ocean tugboat	6	0%	0%	0.0%
OGV	Miscellaneous	36	1%	1%	0.0%
OGV	RoRo	23	1%	0%	0.0%
OGV	Tanker	1,023	29%	17%	0.9%
OGV	**Subtotal**	**3,490**	**100%**	**59%**	**3.0%**
Harbor Craft	Assist tug	145	24%	2%	0.1%
Harbor Craft	Harbor tug	70	12%	1%	0.1%
Harbor Craft	Ferry	89	15%	2%	0.1%
Harbor Craft	Ocean tugboat	172	29%	3%	0.1%
Harbor Craft	Government	55	9%	1%	0.0%
Harbor Craft	Excursion	14	2%	0%	0.0%
Harbor Craft	Crewboat	49	8%	1%	0.0%
Harbor Craft	Work boat	3	1%	0%	0.0%
Harbor Craft	**Subtotal**	**597**	**100%**	**10%**	**0.5%**
CHE	RTG crane	64	26%	1%	0.1%
CHE	Forklift	12	5%	0%	0.0%
CHE	Top handler, side pick	102	42%	2%	0.1%
CHE	Other	10	4%	0%	0.0%
CHE	Yard tractor	56	23%	1%	0.0%
CHE	**Subtotal**	**245**	**100%**	**4%**	**0.2%**
Locomotives	Switching	24	5%	0%	0.0%
Locomotives	Line haul	512	95%	9%	0.4%
Locomotives	**Subtotal**	**536**	**100%**	**9%**	**0.5%**
HDV	On-Terminal	149	14%	3%	0.1%
HDV	On-road	903	86%	15%	0.8%
HDV	**Subtotal**	**1,052**	**100%**	**18%**	**0.9%**
Port	**Total**	**5,920**		**100%**	**5.2%**
SoCAB AQMP	**Total**	**114,898**			

Table 7.7: 2020 SO_x Emissions Contribution, tons and %

Category	Subcategory	SO_x	Percent SO_x Emissions of Total		
			Category	Port	SoCAB AQMP
OGV	Auto carrier	4	2%	2%	0%
OGV	Bulk vessel	10	5%	5%	0%
OGV	Containership	79	42%	40%	1%
OGV	Cruise	8	4%	4%	0%
OGV	General cargo	2	1%	1%	0%
OGV	Ocean tugboat	0	0%	0%	0%
OGV	Miscellaneous	1	1%	1%	0%
OGV	RoRo	4	2%	2%	0%
OGV	Tanker	81	43%	41%	1%
OGV	**Subtotal**	**189**	**100%**	**96.7%**	**3%**
Harbor Craft	Assist tug	0.15	26%	0%	0%
Harbor Craft	Harbor tug	0.06	11%	0%	0%
Harbor Craft	Ferry	0.08	15%	0%	0%
Harbor Craft	Ocean tugboat	0.15	26%	0%	0%
Harbor Craft	Government	0.06	11%	0%	0%
Harbor Craft	Excursion	0.01	2%	0%	0%
Harbor Craft	Crewboat	0.05	8%	0%	0%
Harbor Craft	Work boat	0.00	1%	0%	0%
Harbor Craft	**Subtotal**	**1**	**100%**	**0%**	**0%**
CHE	RTG crane	0.1	7%	0%	0%
CHE	Forklift	0.0	2%	0%	0%
CHE	Top handler, side pick	0.5	35%	0%	0%
CHE	Other	0.0	3%	0%	0%
CHE	Yard tractor	0.8	53%	0%	0%
CHE	**Subtotal**	**1**	**100%**	**1%**	**0%**
Locomotives	Switching	0.0	6%	0%	0%
Locomotives	Line haul	0.5	94%	0%	0%
Locomotives	**Subtotal**	**0**	**100%**	**0%**	**0%**
HDV	On-Terminal	0.4	9%	0%	0%
HDV	On-road	3.5	91%	2%	0%
HDV	**Subtotal**	**4**	**100%**	**2%**	**0%**
Port	**Total**	**195**		**100%**	**3.2%**
SoCAB AQMP	**Total**	**6,033**			

Table 7.8: 2020 CO_2e Emissions Contribution, metric tons and %

Category	Subcategory	CO_2e	Percent Emissions of Total	
			Category	Port
OGV	Auto carrier	6,250	2%	1%
OGV	Bulk vessel	14,518	5%	2%
OGV	Containership	119,583	42%	13%
OGV	Cruise	12,018	4%	1%
OGV	General cargo	3,348	1%	0%
OGV	Ocean tugboat	319	0%	0%
OGV	Miscellaneous	1,962	1%	0%
OGV	RoRo	5,414	2%	1%
OGV	Tanker	122,625	43%	14%
OGV	**Subtotal**	**286,037**	**100%**	**32%**
Harbor Craft	Assist tug	13,142	26%	1%
Harbor Craft	Harbor tug	5,709	11%	1%
Harbor Craft	Ferry	7,403	15%	1%
Harbor Craft	Ocean tugboat	12,901	26%	1%
Harbor Craft	Government	5,433	11%	1%
Harbor Craft	Excursion	1,102	2%	0%
Harbor Craft	Crewboat	4,121	8%	0%
Harbor Craft	Work boat	360	1%	0%
Harbor Craft	**Subtotal**	**50,171**	**100%**	**6%**
CHE	RTG crane	8,869	7%	1%
CHE	Forklift	2,670	2%	0%
CHE	Top handler, side pick	44,397	37%	5%
CHE	Other	3,933	3%	0%
CHE	Yard tractor	61,192	51%	7%
CHE	**Subtotal**	**121,060**	**100%**	**14%**
Locomotives	Switching	3,200	7%	0%
Locomotives	Line haul	41,253	93%	5%
Locomotives	**Subtotal**	**44,453**	**100%**	**5%**
HDV	On-Terminal	37,380	10%	4%
HDV	On-road	349,610	90%	39%
HDV	**Subtotal**	**386,990**	**100%**	**44%**
Port	**Total**	**888,712**		**100%**

SECTION 8 COMPARISON OF 2020 AND 2005 FINDINGS AND EMISSION ESTIMATES

This section provides a comparison of the emission estimates for 2020 and 2005 by source category. The baseline year used to compare every annual inventory is 2005. Due to an OGV emissions estimation methodology change for emission factors in 2020, the 2005 emissions were recalculated using 2005 activity data with the latest emission factors to provide a valid basis for comparison. Due to rounding, the values may not add up to the whole number values for the percentage change or total emissions at the bottom of each table.

Table 8.1: 2005-2020 Port Emissions Comparison by Source Category, tons, metric tons and %

	PM_{10} tons	$PM_{2.5}$ tons	DPM tons	NO_x tons	SO_x tons	CO tons	HC tons	CO_2e MT
2005								
Ocean-going vessels	873	699	596	6,735	6,860	538	237	390,497
Harbor craft	45	41	45	1,107	5	294	70	44,746
Cargo handling equipment	47	44	47	1,289	11	398	65	103,710
Locomotives	43	40	43	1,273	76	179	66	60,579
Heavy-duty vehicles	205	196	205	5,273	37	1,523	318	391,610
Total	**1,213**	**1,020**	**936**	**15,677**	**6,989**	**2,932**	**756**	**991,142**
2020								
Ocean-going vessels	73	67	40	3,490	189	294	132	286,037
Harbor craft	20	18	20	597	1	444	66	50,171
Cargo handling equipment	4	4	3	245	1	742	31	121,060
Locomotives	20	19	20	536	0	127	31	44,453
Heavy-duty vehicles	6	6	6	1,052	4	269	42	386,990
Total	**123**	**113**	**89**	**5,920**	**195**	**1,876**	**301**	**888,712**
Change between 2005 and 2020 (percent)								
Ocean-going vessels	-92%	-90%	-93%	-48%	-97%	-45%	-44%	-27%
Harbor craft	-56%	-56%	-56%	-46%	-88%	51%	-5%	12%
Cargo handling equipment	-91%	-91%	-94%	-81%	-88%	86%	-53%	17%
Locomotives	-53%	-53%	-53%	-58%	-99%	-29%	-54%	-27%
Heavy-duty vehicles	-97%	-97%	-97%	-80%	-90%	-82%	-87%	-1%
Total	**-90%**	**-89%**	**-90%**	**-62%**	**-97%**	**-36%**	**-60%**	**-10%**

Table 8.2 provides a comparison of the number of vessel calls and container cargo throughput as well as the average TEUs per containership call between 2005 and 2020. Compared to 2005, container throughput is up 21%, while overall containership arrivals to POLB are down 26%. The average number of containers per containership is 8,262 TEU per call in 2020, up 64% which is indicative of larger vessels calling at POLB.

Table 8.2: 2005-2020 Container Throughput and Vessel Call Comparison

Year	Container Throughput (TEU)	All Arrivals	Containership Arrivals	Average TEU per Call
2005	6,709,818	2,690	1,332	5,037
2020	8,113,315	1,868	982	8,262
Change (%)	**21%**	**-31%**	**-26%**	**64%**

Table 8.3 presents the total net change in emissions for all source categories in 2020 compared to 2005.

Table 8.3: 2005-2020 Emissions Comparison, tons, metric tons and %

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2005	1,213	1,020	936	15,677	6,989	2,932	756	991,142
2020	123	113	89	5,920	195	1,876	301	888,712
Change	**-1,090**	**-907**	**-847**	**-9,757**	**-6,794**	**-1,056**	**-455**	**-102,431**
Change (%)	**-90%**	**-89%**	**-90%**	**-62%**	**-97%**	**-36%**	**-60%**	**-10%**

The following paragraphs summarize the overall reasons for the differences in 2005 and 2020 emissions by source category.

Ocean-Going Vessels

Emissions from OGVs were lower in 2020 compared to 2005 levels as a result of significant increased participation in the Port's Green Flag incentive program, CARB's low sulfur marine fuel regulation requiring distillate fuels used by ocean going vessels with a maximum sulfur content of 0.1%, North American Emission Control Area (ECA), and implementation of the CARB's control measure for OGV at-berth regulation. Emission reductions have also occurred due to increased vessel efficiency and utilization due to the deployment of larger container vessels that has resulted in fewer vessel calls. Impacts from COVID-19 also contributed to emission changes in 2020 and are discussed in more detail in the emissions comparison to previous year subsection.

Harbor Craft

Harbor craft emissions decreased for all pollutants, except for CO and CO_2e. The decrease is due to the turnover to newer engines which have lower emission standards and the use of lower sulfur content fuel. Between 2005 and 2020, fleet turnover was accelerated as a result of CARB's in-use harbor craft regulations and grant funding made available, such as Carl Moyer and EPA grants, for the replacement of older engines with newer and cleaner engines. The increase in CO and CO_2e emissions is related to the impact from the introduction of cleaner engines for NO_x and PM, but that do not have lower standards for CO and CO_2e and the increase in energy consumption in 2020 as compared to 2005.

Cargo Handling Equipment

Cargo handling equipment emissions decreased for all pollutants, except for CO and CO_2e. The decrease is due to fleet turnover to newer CHE which have lower emission standards and use of lower sulfur content fuel. Between 2005 and 2020, fleet turnover was accelerated as a result of the continued replacement and retrofit of existing equipment with cleaner engines and implementation of CAAP Tier 4 measures, green leases, grant funding, and the CARB in-use CHE regulation resulted in a cleaner fleet. The increase in CO emissions from cargo handling equipment is attributed to the addition of several gasoline-fuel yard tractors with higher CO emission rates compared to diesel yard tractors. The increase in CO_2e is mainly due to the increase in energy consumption in 2020 as compared to 2005 and lack of any CO_2e emission standards.

Locomotives

Emissions from rail locomotives were lower in 2020 compared to 2005 due in part to the turnover of locomotives to cleaner ultra-low emissions switching locomotives in the PHL and UP fleets. In addition, use of cleaner fuels and cleaner line haul locomotives by both UP and BNSF contributed to the reduced emissions.

Heavy-Duty Vehicles

Truck emissions were significantly lower in 2020 compared to 2005 due to the implementation of the Port's Clean Trucks Program that progressively banned older, higher-emitting trucks from Port terminals. The most recent stage requires that newly registered trucks, as of 2018, must be model year 2014 or newer. 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. Other factors include normal fleet turnover and decreased total vehicle miles travelled due to the increase in utilization of on-dock rail and changes in regional travel patterns since 2005.

Emissions Comparison to Previous Year

Calendar year 2020 proved to be a challenging year to the maritime industry and therefore, the comparison of the 2020 to previous year is included. Several unique factors affected activity, efficiency and thus emissions in 2020: 1) the COVID-19 pandemic led cruise ships to stop passenger operations in mid-March which lowered berth calls but increased anchorage calls; 2) CARB provided exemptions to the At-Berth Regulation for (a) excessive heat in August - September timeframe and for (b) COVID-19 emergency reasons in 2020 which resulted in fewer shore power calls for containerships; 3) the largest decline in world liquid fuels consumption[21] in recent history resulted in less tankers calling the Port; 4) increased anchorage calls for containerships due to demand in consumer goods in second half of the year; and 5) worker safety agreement during 2020 to cap the number of gangs per ship to four. The reduced number of cranes for the larger containerships resulted in extended time at berth. Table 8.4 compares the 2020 emissions to the previous year.

Table 8.4: 2019-2020 Air 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 MT
2019								
Ocean-going vessels	77	71	46	3,999	198	338	151	300,038
Harbor craft	22	20	22	637	1	458	69	51,698
Cargo handling equipment	4	4	3	274	1	697	29	109,052
Locomotives	21	20	21	592	1	135	33	47,239
Heavy-duty vehicles	5	5	5	953	3	227	36	322,438
Total	**130**	**120**	**97**	**6,454**	**203**	**1,855**	**318**	**830,464**
2020								
Ocean-going vessels	73	67	40	3,490	189	294	132	286,037
Harbor craft	20	18	20	597	1	444	66	50,171
Cargo handling equipment	4	4	3	245	1	742	31	121,060
Locomotives	20	19	20	536	0	127	31	44,453
Heavy-duty vehicles	6	6	6	1,052	4	269	42	386,990
Total	**123**	**113**	**89**	**5,920**	**195**	**1,876**	**301**	**888,712**
Change between 2019 and 2020 (percent)								
Ocean-going vessels	-6%	-6%	-12%	-13%	-5%	-13%	-13%	-5%
Harbor craft	-10%	-10%	-10%	-6%	-3%	-3%	-4%	-3%
Cargo handling equipment	4%	4%	2%	-10%	11%	6%	5%	11%
Locomotives	-6%	-6%	-6%	-9%	-6%	-6%	-6%	-6%
Heavy-duty vehicles	16%	16%	16%	10%	19%	18%	16%	20%
Total	**-5%**	**-5%**	**-8%**	**-8%**	**-4%**	**1%**	**-5%**	**7%**

[21] U.S. Energy Information Administration, *www.eia.gov/outlooks/steo/report/global_oil.php*

The 2019 HDV emissions were re-calculated to include the latest EMFAC2021 for HDV emissions and the 2019 OGV emissions were also re-calculated to include the latest emission factors. Therefore the 2019 emissions will not match the published 2019 EI report emissions.

Table 8.4 shows that overall, 2020 emissions decreased when compared to previous year, except for GHG emissions (CO_2e) which increased by 7% and CO which increased 1%. Below are source category specific explanations for the emission changes when comparing 2020 to 2019:

- For OGVs, there were fewer vessel calls in 2020 due mainly to fewer tankers and cruise ships. The anchorage emissions were higher in 2020 due to increased number of containerships and cruise ships at anchorage. There were fewer tankers at anchorage than in previous years due to the lower liquid bulk demand. The lower calls and fewer larger tanker calls at berth and anchorage resulted in lower emissions in 2020 despite the increased anchorage emissions.
- For harbor craft, overall activity was lower in 2020 for various vessel types, such as excursions vessels and ferries, and this coupled with increased usage of newer and cleaner engines resulted in lower emissions for 2020 as compared to previous year.
- For CHE, hours of use for equipment at the container terminals were higher due to the record container throughput in 2020 which led to an increase in emissions for most pollutants, except for NO_x emissions. The NO_x emissions were lower in 2020 due to increased usage of Tier 4 final CHE.
- For locomotives, the emissions decreased due to a decrease in on-dock and ICTF rail transport and also due to a decrease in the fleet composite NO_x emission factor resulting from fleet mix improvement.
- For heavy-duty vehicles, the emissions increased due to increased container throughput and the decrease in on-dock and ICTF rail throughput which resulted in more truck trips. The PM and NO_x emissions increase was lower than the GHG emissions increase due to the newer fleet in 2020.

Table 8.5 summarizes and compares vessel arrivals and containerized cargo throughput in twenty-foot equivalent units (TEU) at POLB in 2019 and 2020. Relative to previous year, containerized cargo throughput is up 6% and containership arrivals are up 2%, but the overall vessel calls to POLB are down 11% mainly due to less tankers and cruise ship calls.

Table 8.5: 2019-2020 Container Throughput and Vessel Call Comparison

Year	Container Throughput (TEU)	All Arrivals	Containership Arrivals	Average TEU per Call
2019	7,632,032	2,104	967	7,892
2020	8,113,315	1,868	982	8,262
Change (%)	**6%**	**-11%**	**2%**	**5%**

Table 8.6 presents the comparison for vessel arrivals to Port for 2020 and previous year. There were fewer vessel calls in 2020 for most vessels, except containership and other (general cargo, ATBs, miscellaneous).

Table 8.6: 2019-2020 Vessel Arrivals Comparison by Vessel Type

Vessel Type	2019 Arrival	2020 Arrival	2019-2020 Change
Containership	967	982	2%
Tanker	418	372	-11%
Cruise	254	72	-72%
Bulk Carrier	214	196	-8%
Auto Carrier/RoRo	179	161	-10%
Other	72	85	18%
Total	**2,104**	**1,868**	**-11%**

Table 8.7 presents in greater detail the tanker arrivals by the various tanker categories. It shows that the largest tankers, the very large and ultra-large crude tankers (VLCC and ULCC), had significantly lower calls in 2020 which had an impact in the lower OGV emissions for 2020 as compared to 2019, despite the increase in anchorage calls (Table 8.8) by other vessel types.

Table 8.7: 2019-2020 Tanker Arrivals Comparison

Tanker Category	2019 Arrival	2020 Arrival	2019-2020 Change
Tanker - Chemical	110	126	15%
Tanker - Handysize	6	8	33%
Tanker - Panamax	63	38	-40%
Tanker - Aframax	101	92	-9%
Tanker - Suezmax	73	86	18%
Tanker - VLCC	15	4	-73%
Tanker - ULCC	50	18	-64%
Total	**418**	**372**	**-11%**

Table 8.8 presents the comparison of vessels at anchorage. Containerships, cruise ships, and auto carriers had increased number of vessels at anchorage in 2020. There were fewer tankers at anchorage than in previous years due to the lower liquid bulk demand.

Table 8.8: 2019-2020 Anchorage Vessel Count Comparison by Vessel Type

Vessel Type	2019 Anchorage Count	2020 Anchorage Count	2019-2020 Change
Containership	101	257	154%
Tanker	634	532	-16%
Cruise	1	13	1200%
Bulk Carrier	195	158	-19%
Auto Carrier/RoRo	16	21	31%
Other	46	46	0%
Total	**993**	**1,027**	**3%**

Ocean-Going Vessels

Overall energy consumption (in terms of kWh) by OGV emission sources in 2005 and 2020 are shown in Table 8.9. The kWh associated with the Advanced Maritime Emission Control System (AMECS) technology generators are included with the auxiliary engine kWh shown in the table. Note that the AMECS was unable to be utilized in the fourth quarter of 2020 due to the system losing CARB certification.

The main engine activity has decreased since 2005 mainly due to the VSR program and fewer vessel calls, while the auxiliary engine activity has decreased due to shore power regulation and fewer vessel calls. The boiler activity increase is due to larger vessels staying longer at berth and no program or regulation to decrease the boiler activity.

Table 8.9: OGV Energy Consumption Comparison by Emission Source, kWh

Year	All Emission Sources	Main Eng	Aux Eng	Boiler
2005	511,620,833	153,369,455	229,580,036	128,671,341
2019	370,303,958	84,147,313	143,417,507	142,739,139
2020	349,135,170	65,722,114	139,600,550	143,812,506
CAAP Progress	**-32%**	**-57%**	**-39%**	**12%**
Previous Year	**-6%**	**-22%**	**-3%**	**1%**

The various emission reduction strategies for ocean-going vessels that were in effect in 2020 are listed in Table 8.10. A column has been added for vessels that used the Advanced Maritime Emission Control System (AMECS) technology as an alternative technology to shore power to comply with the CARB's Vessel At-Berth shore power regulation.

Table 8.10: OGV Emission Reduction Strategies

	Percent (%) of All Calls					
Year	Fuel Switch Aux Eng	Fuel Switch Main Eng	VSR 20 nm	VSR 40 nm	Shore Power	AMECS
2005	14%	0%	68%	0%	0%	0%
2019	100%	100%	98%	93%	41%	0.6%
2020	100%	100%	96%	91%	46%	0.4%

Table 8.11 summarizes the share of main engine IMO NO_x standards tier calls (Tier). The No Tier column represents vessels that do not have diesel engines, such as steamships. Tier I refers to calls by vessels meeting or exceeding Tier I standards (vessels constructed from 2000-2010), Tier II refers to calls by vessels meeting or exceeding Tier II standards (vessels constructed from 2011-2015), and Tier III refers to calls by vessels meeting or exceeding the Tier III standards, which are in effect in the North American ECA for vessels constructed on or after January 1, 2016.

Table 8.11: OGV Main Engine Calls by IMO NO_x Tiers

Year	IMO Tier 0	IMO Tier I	IMO Tier II	IMO Tier III	No Tier
2005	54%	42%	0%	0.0%	4.0%
2019	15%	56%	28%	0.4%	0.1%
2020	7%	51%	37%	2.0%	3.0%

In 2020, 15 vessels met the Tier III NO_x emissions standards: one auto carrier, seven containerships and seven tanker vessels. NO_x emissions for Tier III vessels are 75% cleaner than Tier II vessels when operating at or above 25% main engine load.

Harbor Craft

As shown in Table 8.12, compared to 2005, the harbor craft population count operating at the Port in 2020 decreased by 8%, and total engine count increased by 12%. There was a 12% increase in the overall energy consumption (kWh) from 2005 to 2020.

Table 8.12: Harbor Craft Count and Energy Consumption Comparison

Year	Vessel Count	Engine Count	Total kWh
2005	92	301	67,684,712
2019	79	297	78,199,327
2020	85	319	75,890,979
CAAP Progress	**-8%**	**6%**	**12%**
Previous Year	**8%**	**7%**	**-3%**

For the 2019-2020 comparison, the number of vessels increased by 8% from previous year due to tugboats added to existing fleet to manage the increased vessel size and activity within San Pedro Bay. In addition, a new tugboat company and new pilot boat were added to the inventory. Despite the increase in vessel count, the energy consumption is lower in 2020 than previous year. This is mainly due to the excursion vessels and ferries being negatively impacted by COVID-19 due to ceasing operations from mid-March to mid-June 2020 per CA governor's executive order.

Table 8.13 summarizes the distribution of engines based on EPA's engine standards. Since 2005, the percentage of Tier 2 and Tier 3 engines increased significantly due to the introduction of newer vessels with newer engines into the fleet and replacements of existing higher-emitting engines with cleaner engines. Over the years, with better data collection techniques and better record keeping required with grant funded repowers, the number of engines of unknown tier level has decreased significantly. In 2020, a tugboat with Tier 4 propulsion engines was included in the inventory for the first time.

Table 8.13: Harbor Craft Engine Tier Change, %

	2005 Engine Count	2019 Engine Count	2020 Engine Count	2005-2020 % Change	2019-2020 % Change
Unknown	102	2	2	-98%	0%
Tier 0	86	7	4	-95%	-43%
Tier 1	102	14	14	-86%	0%
Tier 2	11	159	156	1318%	-2%
Tier 3	0	115	141	100%	23%
Tier 4	0	0	2	100%	100%
Total	**301**	**297**	**319**	**6%**	**7%**

Table 8.14 compares the harbor craft energy consumption (kWh) by engine tier. In 2020, 92% of energy consumed by harbor craft is from Tier 2 to Tier 4 engines.

Table 8.14: Engine Energy and Activity Change, kWh and %

Engine Tier	2005 kWh	2005 % of Total	2019 kWh	2019 % of Total	2020 kWh	2020 % of Total
Tier 0	44,096,837	65.2%	101,183	0.1%	50,591	0.1%
Tier 1	23,254,327	34.4%	6,186,173	7.9%	6,264,725	8.3%
Tier 2	333,548	0.5%	52,582,476	67.2%	41,459,520	54.6%
Tier 3	0	0.0%	19,329,496	24.7%	26,639,253	35.1%
Tier 4	0	0.0%	0	0.0%	1,476,890	1.9%
Total	**67,684,712**	**100%**	**78,199,327**	**100%**	**75,890,979**	**100%**

Cargo Handling Equipment

Between 2005 and 2020, there was a 15% increase in the equipment count to accommodate an increase in TEU throughput and operational changes at the Port over the years. The largest increase is in electric equipment added at the Port. In 2020, there were 235 pieces of electric equipment operating at the Port or 16% of the total CHE. There was a 14% increase in energy consumption for fossil-fueled equipment, measured as total kWh. Table 8.15 shows the energy consumption (in kWh) from fossil-fueled equipment. It does not include electric equipment consumption. Compared to previous year, there was an 11% increase in energy consumption, higher than the increased TEU throughput (6%), and may be due to the surge in activity at container terminals that occurred towards the end of the year.

Table 8.15: CHE Count and Energy Consumption Comparison

Year	Population	Activity (kWh)
2005	1,259	134,618,521
2019	1,478	137,925,864
2020	1,454	153,095,569
CAAP Progress	**15%**	**14%**
Previous Year	**-2%**	**11%**

Table 8.16 shows the equipment energy consumption (kWh) comparison for diesel fueled equipment by diesel engine tier and by non-diesel fueled equipment for calendar years 2020 and 2005. Among diesel equipment, 81% of the energy consumed in 2020, is from equipment with on-road engines and Tier 4 engines. The trend to use cleaner equipment continued to increase when compared to previous year (77%).

Table 8.16: CHE Energy Consumption Comparison by Engine Tier, kWh

Engine Type	Engine Tier	2005 kWh	2005 % of Total	2019 kWh	2019 % of Total	2020 kWh	2020 % of Total
Diesel	Tier 0	12,023,155	9%	45,117	0.03%	37,506	0.02%
Diesel	Tier 1	65,059,472	48%	7,600,725	6%	5,366,775	4%
Diesel	Tier 2	49,337,838	37%	7,671,966	6%	5,455,806	4%
Diesel	Tier 3	41,636	0.03%	2,565,114	2%	1,947,016	1%
Diesel	Tier 4i	0	0%	21,983,491	16%	26,480,555	17%
Diesel	Tier 4f	0	0%	45,695,380	33%	60,990,523	40%
Diesel	Onroad	6,610,773	5%	37,886,508	27%	37,011,823	24%
Gasoline		3,866	0.003%	13,335,965	10%	15,203,199	10%
Propane		1,541,782	1%	1,141,597	1%	602,366	0.39%
Total		**134,618,521**	**100%**	**137,925,864**	**100%**	**153,095,569**	**100%**

Tables 8.17 and 8.18 compare the CHE emission reduction technologies and fuels used in 2020 with those used in 2005. There was a significant increase in the number of CHE equipped with cleaner on-road engines in 2020. All of the DPF retrofits installed are on equipment at Tier 3 or lower level. Compared to 2019, there are 4 propane forklifts with a retrofit in 2020. Improved data from the terminals provided dates for the retrofit for existing equipment. This is not a reflection of older equipment added to the terminals' existing fleets.

Table 8.17: CHE Emission Reduction Technology Equipment Count Comparison

Equipment	2005 On-road Engine	2019 On-road Engine	2020 On-road Engine	2005 DPF Retrofit	2019 DPF Retrofit	2020 DPF Retrofit	2005 BlueCAT Retrofit	2019 BlueCAT Retrofit	2020 BlueCAT Retrofit	2005 Hybrid	2019 Hybrid	2020 Hybrid
Forklift	0	0	0	0	36	17	0	11	16	0	0	0
RTG crane	0	0	0	0	21	16	0	0	0	0	15	20
Side handler	0	0	0	0	6	6	0	0	0	0	0	0
Top handler	0	0	0	0	50	38	0	0	0	0	0	0
Yard tractor	53	344	267	0	0	0	0	0	0	0	0	0
Other	0	5	4	0	5	4	0	5	7	0	0	0
Total	**53**	**349**	**271**	**0**	**118**	**81**	**0**	**16**	**23**	**0**	**15**	**20**

Table 8.18: CHE Equipment Count by Fuel Type and Electric Equipment Comparison

Equipment	2005 ULSD	2019 ULSD	2020 ULSD	2005 Propane Engine	2019 Propane Engine	2020 Propane Engine	2005 Gasoline Engine	2019 Gasoline Engine	2020 Gasoline Engine	2005 Electric Equipemnt	2019 Electric Equipemnt	2020 Electric Equipemnt
Forklift	0	98	110	122	102	97	1	24	24	3	8	8
RTG crane	0	54	56	0	0	0	0	0	0	0	0	0
Side handler	0	7	7	0	0	0	0	0	0	0	0	0
Top handler	0	188	192	0	0	0	0	0	0	0	0	2
Yard tractor	0	570	505	0	2	2	0	134	135	0	1	6
Other	0	67	74	11	12	15	1	2	2	2	209	219
Total	**0**	**984**	**944**	**133**	**116**	**114**	**2**	**160**	**161**	**5**	**218**	**235**
Percent	**0%**	**67%**	**65%**	**11%**	**8%**	**8%**	**0%**	**11%**	**11%**	**0%**	**15%**	**16%**

Table 8.19 shows a comparison of CHE counts by equipment type. In total, there was a 15% increase in equipment count from 2005 to 2020, with the largest increase for top handlers, sweepers and electric equipment. Electric equipment account for 16% of the total equipment at the Port in 2020. Compared to previous year, the equipment count decreased by 2% due to less fossil fueled equipment.

Table 8.19: CHE Equipment Count and Change, %

Equipment	2005	2019	2020
Forklift	295	232	231
RTG crane	85	54	56
Side handler	43	7	7
Top handler	113	188	192
Yard tractor	641	706	642
Sweeper	15	20	20
Electric	na	218	235
Other	67	53	71
Total	**1,259**	**1,478**	**1,454**

Table 8.20 shows the electric equipment count for 2020, previous year and 2005. In 2005, the count of the electric ship to shore cranes was not included in the 2005 EI.

Table 8.20: CHE Count of Electric Equipment

Equipment	2005 Electric	2019 Electric	2020 Electric
AGV	0	72	72
ASC	0	47	55
Crane	0	6	6
Electric pallet jack	2	2	2
Forklift	3	8	8
Man Lift	0	2	2
Material handler	0	1	1
Ship to shore crane	na	72	74
Sweeper	0	1	1
Top handler	0	0	2
Truck	0	6	6
Yard tractor	0	1	6
Total	**5**	**218**	**235**

Locomotives

Table 8.21 shows the various throughput comparisons for rail transportation in 2005 and 2020. The total port throughput between calendar years 2005 and 2020 was higher by 21% in 2020. The on-dock rail throughput was higher in 2020 than in 2005. The on-dock rail percent of total throughput increased from 16% to 20% between 2005 and 2020.

Compared to previous year, the on-dock rail throughput was slightly lower in 2020 despite the 6% increase in total port throughput.

Table 8.21: Container Throughput Comparison, TEU and %

	2005	2019	2020	2005-2020 Change	2019-2020 Change
Total Port Throughput	6,709,818	7,632,032	8,113,315	21%	6%
Total On-Dock Rail*	1,094,765	1,616,992	1,584,517	45%	-2%
% On-Dock	16%	21%	20%		

*Based on average of 1.8 TEUs per container

Heavy-Duty Vehicles

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

- Newer fleet of trucks due to the Port's Clean Trucks Program (CTP). As of 2018, newly registered trucks must be model year 2014 or newer.
- The terminals optimized their gate systems and they use radio frequency identification (RFID) readers to identify trucks complying with the CTP provisions, which helped reduce idling time.
- Terminal automation reduces wait times and contributes to continued improvement of turn time at terminals.

The CTP and engine emission standards are responsible for most of the 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 8.22 shows total port-wide estimated on-terminal idling times reported in 2005, 2019 and 2020. Compared to 2005, reported idling time decreased overall despite increases in TEU throughput and truck trips.

Table 8.22: HDV Total Idling Time Comparison, hours and %

EI Year	Total Idling Time (hours)
2005	3,854,273
2019	2,857,207
2020	3,266,977
CAAP Progress	**-15%**
Previous Year	**14%**

Table 8.23 compares the vehicle miles traveled by heavy-duty trucks in 2005, 2019 and 2020. Reported on-terminal VMT in 2020 was higher than in 2005 because of increased throughput and because several terminals re-evaluated their operations and provided higher estimates of average on-terminal driving distances. Compared to previous year, the on-road VMT is higher by 23% mainly due to decreases in on-dock and off-dock rail, which increased truck activity and lengthened average trip distances due to more distant destinations within the air basin.

Table 8.23: HDV Vehicle Miles Traveled Comparison, miles and %

Activity Location	2005 VMT	2019 VMT	2020 VMT	2005-2020 Change %	2019-2020 Change %
On-Terminal	2,866,476	5,237,843	4,908,691	71%	-6%
On-Road	213,716,895	169,505,239	208,199,609	-3%	23%
	216,583,371	**174,743,082**	**213,108,300**	**-2%**	**22%**

Table 8.24 presents the call-weighted age for the trucks. Compared to 2005, the average age of trucks visiting the Port has decreased from 11 to 7 years due to the Port's Clean Trucks Program launched in October 2008 requiring the progressive ban of pre-2007 trucks between 2008 and up to present. Compared to previous year, the average age of the trucks decreased slightly due to the most recent requirement that newly registered trucks, as of 2018, must be model year 2014 or newer.

Table 8.24: Call-Weighted HDV Age

Year	Call-Weighted Average Age (years)
2005	11
2019	7.6
2020	7

SECTION 9 METRICS

To measure the effectiveness of emissions reduction strategies and progress towards the San Pedro Bay Emission Reduction Standards, the Port has established metrics to track emissions per unit of work by source category. Since port operations are varied with a mix of container and non-container cargo, the metrics listed in this section are based on TEU throughput and metric tons of cargo moved through the Port. Table 9.1 compares the amount of throughput in 2020 and 2005 in TEU.

Table 9.1: Container and Cargo Throughput and Change, %

Year	Throughput Container (TEU)
2005	6,709,818
2019	7,632,032
2020	8,113,315
CAAP Progress	**21%**
Previous Year	**6%**

Tables 9.2 shows the port-wide tons of emissions per 10,000 TEU in 2005, 2019 and 2020. The tons of emissions per 10,000 TEU of cargo decreased, an improvement from 2005 and 2019, except for slight increase for CO_2e as compared to 2019.

Table 9.2: Emission Efficiency Metric Comparison, annual tons per 10,000 TEU

Year	PM_{10}	$PM_{2.5}$	DPM	NO_x	SO_x	CO	HC	CO_2e
2005	1.81	1.52	1.39	23.36	10.42	4.37	1.13	1477
2019	0.17	0.16	0.13	8.46	0.27	2.43	0.42	1088
2020	0.15	0.14	0.11	7.30	0.24	2.31	0.37	1095
CAAP Progress	**-92%**	**-91%**	**-92%**	**-69%**	**-98%**	**-47%**	**-67%**	**-26%**
Previous Year	**-11%**	**-11%**	**-13%**	**-14%**	**-10%**	**-5%**	**-11%**	**1%**

SECTION 10 CAAP PROGRESS

The Port's annual emissions inventories serve as the primary tool to track progress towards achieving the Clean Air Action Plan's San Pedro Bay Standards. These standards consist of the following emission reduction goals:

- Mass Emissions Reduction Standards:
  - By 2014, reduce emissions by 72% for DPM, 22% for NO_x, and 93% for SO_x from 2005 levels
  - By 2023, reduce emissions by 77% for DPM, 59% for NO_x, and 93% for SO_x from 2005 levels

The reduction of goods movement-related emissions in 2020 compared to 2005 can be attributed to a number of initiatives, including emissions reduction programs identified in the CAAP and implemented by the Port, such as the Clean Trucks Program, Green Flag Vessel Speed Reduction Program, as well as CARB regulations requiring the use of shore power for vessels at berth and the use of cleaner vessel fuels.

Economic forecasts indicate cargo volumes through the Port of Long Beach will increase in upcoming years. While emission reductions are expected to continue in the future toward meeting the CAAP goals, the rapid rate of emission reductions in recent years may not continue as cargo volumes increase. However, continued implementation of the CAAP and regulatory programs will continue to provide emissions benefits from goods movement-related sources and may offset impacts from the projected growth in trade.

The mass emissions reduction standards are represented as a percentage reduction of emissions from 2005 levels. Table 10.1 summarizes the standardized estimates of emissions by source category for calendar years 2005 and 2020 using the 2020 methodology. In 2020, the Port met and exceeded the CAAP 2023 DPM, NO_x and SO_x emission reduction standards.

Table 10.1: 2005-2020 Emissions in tons and Reductions in % Compared to CAAP San Pedro Bay Emissions Reduction Standards

Category	2005		2020
DPM (tons)			
Ocean-going vessels	596		40
Harbor craft	45		20
Cargo handling equipment	47		3
Locomotives	43		20
Heavy-duty vehicles	205		6
Total	**936**		**89**
Cumulative DPM Emissions Reduction Achieved in 2020			**90%**
CAAP San Pedro Bay DPM Emissions Reduction Standards		**2014**	**72%**
		2023	**77%**
NO_x (tons)			
Ocean-going vessels	6,735		3,490
Harbor craft	1,107		597
Cargo handling equipment	1,289		245
Locomotives	1,273		536
Heavy-duty vehicles	5,273		1,052
Total	**15,677**		**5,920**
Cumulative NO_x Emissions Reduction Achieved in 2020			**62%**
CAAP San Pedro Bay NO_x Emissions Reduction Standards		**2014**	**22%**
		2023	**59%**
SO_x (tons)			
Ocean-going vessels	6,860		189
Harbor craft	5		1
Cargo handling equipment	11		1
Locomotives	76		0
Heavy-duty vehicles	37		4
Total	**6,989**		**195**
Cumulative SO_x Emissions Reduction Achieved in 2020			**97%**
CAAP San Pedro Bay SO_x Emissions Reduction Standards		**2014**	**93%**
		2023	**93%**

APPENDIX A:
REGULATORY AND SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN (CAAP) MEASURES

APPENDIX A: REGULATORY AND SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN (CAAP) MEASURES

This appendix summarizes the current regulatory initiatives and Port measures related to port activity that influenced 2020 emissions. Almost all goods movement-related emissions in and around the port come from five emission source categories: OGVs, HDVs, CHE, harbor craft, and locomotives. The responsibility for the emissions control of the majority of these sources falls under the jurisdiction of local (South Coast Air Quality Management District [SCAQMD]), state (CARB), or federal (U.S. Environmental Protection Agency [EPA]) agencies.

Clean Air Action Plan (CAAP) Strategies

At the end of 2017, the Ports of Long Beach and Los Angeles released the final CAAP 2017 Update[1]. The CAAP 2017 Update contains new strategies from 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 both 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 Long Beach and the City of Los Angeles adopted the Clean Truck Fund Rate of $10 per loaded TEU moved by truck in and out of port terminals. There are certain exemptions for use of low NO_x and zero emissions trucks. Currently, Port staff are working on strategies to implement the Clean Truck Fund rates and develop priorities and guidance for distributing funds to incentivize transition to near-zero and zero-emission trucks.
- Requiring terminal operators to purchase zero-emissions equipment if feasible, or near-zero or cleanest 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 use of on-dock rail to shift more cargo leaving the port to go by rail.

[1] *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 existing 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 of Long Beach and Los Angeles have developed the following standard for reducing overall goods movement-related health risk impacts, relative to 2005 emissions level:

- By 2020, reduce the population-weighted cancer risk attributed to port-related DPM pollution by 85% in highly impacted communities located proximate to port sources and throughout the residential areas in the port region.

Emission Reduction Standard

Consistent with the ports' commitment to meet their fair-share of mass emission reductions of air pollutants, the Ports of Long Beach and Los Angeles developed the following standards for reducing air pollutant emissions from goods movement-related activities, relative to 2005 emission levels:

- By 2014, reduce emissions of NO_x by 22%, of SO_x by 93%, and of DPM by 72% to support attainment of the national fine particulate matter ($PM_{2.5}$) standards.
- By 2023, reduce emissions of NO_x by 59%, of SO_x by 93%, and of DPM by 77% to support attainment of the national and federal 8-hour ozone standards and national 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 tables summarize current regulatory programs and CAAP measures by major source category that influenced 2020 emissions from goods movement-related operations at the Port.

Table A.1: OGV Emission Regulations, Standards and Policies

Agency	Regulation/Standard/Policy	Targeted Pollutants	Implementation Year	Impact
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 2 2016 – Tier 3 for ECA only	Sets NO_x emission standard for auxiliary and propulsion engines over 130 kW output power on newly built vessels
IMO	**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 SO_x	2012 ECA – 1% Sulfur 2015 ECA – 0.1% Sulfur	Significantly reduces emissions due to low sulfur content in fuel by creating Emissions Control Area (ECA)
IMO	**Energy Efficiency Design Index (EEDI) for International Shipping** *www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Technical-and-Operational-Measures.aspx*	CO_2 and other pollutants	2013	Increases the design efficiencies of ships relating to energy and emissions
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. The ultimate goal is to phase out GHG
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/otaq/oceanvessels.htm#engine-fuel*	DPM PM NO_x SO_x	2011 – Tier 2 2016 – Tier 3	Auxiliary and propulsion on US-Flagged new built vessels; Use of low sulfur fuel

Table A.1 (continued): OGV Emission Regulations, Standards and Policies

Agency	Regulation, Standard, or Policy	Targeted Pollutants	Implementation Year	Impact
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*	All	2014 – 50% 2017 –70% 2020 – 80%	Vessels must use Shore power (or equivalent) requirement to reduce at-berth emissions. Compliance levels based on fleet percentage visiting the port.
CARB	**Ocean-going Ship Onboard Incineration** *www.arb.ca.gov/ports/shipincin/shipincin.htm*	DPM PM HC	2007	Vessels operators cannot incinerate within 3 nm of the California coast
SPBP 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
SPBP CAAP	**CAAP Measure – OGV 2** **Reduction of At-Berth OGV Emissions** *www.cleanairactionplan.org/strategies/ships/*	All	2014	Shore power requirements. Vessel operators and terminals
SPBP CAAP	**CAAP Measure – OGV 5 and 6** **Cleaner OGV Engines and OGV Engine Emissions Reduction Technology Improvements** *www.cleanairactionplan.org/strategies/ships/*	DPM PM NO_x	2012	Vessel operators who choose to participate in technology demonstrations and/or Green Ship Incentive Program

Table A.2: Harbor Craft Emission Regulations, Standards and Policies

Agency	Regulation, Standard, or Policy	Targeted Pollutants	Implementation Year	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 SO_x	2006 – 15 ppm	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 NO_x	2009 to 2020 - Depending on engine model year	Most harbor craft homeported in SCAQMD must meet more stringent emissions limits according to a compliance schedule
SPBP CAAP	**CAAP Measure – HC 1 Performance Standards for Harbor Craft** *www.cleanairactionplan.org/strategies/harbor-craft/*	All	2009 to 2020 - Depending on engine model year	Modernization of harbor craft operating in San Pedro Bay Ports.

Table A.3: Cargo Handling Equipment Emission Regulations, Standards and Policies

Agency	Regulation, Standard, or Policy	Targeted Pollutants	Implementation Year	Impact
EPA	**Emission Standards for Non-Road Diesel Powered Equipment** *www.epa.gov/otaq/standards/nonroad/nonroadci.htm*	All	2008-2015	All non-road (also known as off-road) equipment.
CARB	**Regulation for Cargo Handling Equipment Operating at Ports and Intermodal Railyards** *www.arb.ca.gov/regact/2011/cargo11/cargo11.htm*	All	2007-2017; Opacity test compliance starting in 2016	All cargo handling equipment operating at ports and intermodal railyards.
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 – Phase 1 2010 – Phase 2	Emission standards for large spark-ignition engines 25 hp or greater.
CARB	**Fleet Requirements for Large Spark Ignition Engines** *www.arb.ca.gov/regact/2010/offroadlsi10/lsifinalreg.pdf*	All	2009-2013	More stringent emissions requirements for fleets of large spark ignition engine equipment fleets.
SPBP CAAP	**CAAP Measure – CHE1 Performance Standards for CHE** *www.cleanairactionplan.org/strategies/cargo-handling-equipment/*	All	2007-2014	Turnover to Tier 4 cargo handling equipment per lease renewal agreement

Table A.4: Railroad Locomotives Emission Regulations, Standards and Policies

Agency	Regulation, Standard, or Policy	Targeted Pollutants	Implementation Year	Impact
EPA	**Emission Standards for New and Remanufactured Locomotives and Locomotive Engines- Latest Regulation** *www.epa.gov/otaq/standards/nonroad/locomotives.htm*	DPM 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/otaq/fuels/dieselfuels/regulations.htm*	SOx 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 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	UP and BNSF locomotives
SPBP CAAP	**CAAP Measure – RL1 Pacific Harbor Line (PHL) Rail Switch Engine Modernization** *www.cleanairactionplan.org/strategies/trains/*	PM	2010	PHL switcher engines
SPBP CAAP	**CAAP Measure – RL2 Class 1 Line-haul and Switcher Fleet Modernization** *www.cleanairactionplan.org/strategies/trains/*	All	2023 – Tier 3	Class 1 locomotives at ports
SPBP CAAP	**CAAP Measure – RL3 New and Redeveloped Near-Dock Rail Yards** *www.cleanairactionplan.org/strategies/trains/*	All	2020 – Tier 4	New near-dock rail yards

Table A.5: Heavy-Duty Vehicles Emission Regulations, Standards and Policies

Agency	Regulation, Standard, or Policy	Targeted Pollutants	Implementation Year	Impact
CARB/EPA	**Emission Standards for New 2007+ On-Road Heavy-Duty Vehicles** *www.arb.ca.gov/msprog/onroadhd/reducstd.htm*	NO_x 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/msprog/obdprog/section1971_1_clean2013.pdf*	NOx PM	2010+	All new on-road heavy-duty vehicles
CARB	**Ultra-Low Sulfur Diesel Fuel Requirement** *www.arb.ca.gov/regact/ulsd2003/ulsd2003.htm*	All	2006 - ULSD	All on-road heavy-duty vehicles
CARB	**Drayage and 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 NOx Software Upgrade Program** *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/cc/hdghg/hdghg.htm*	CO_2	Phase 1 starting in 2012	Heavy-duty tractors that pull 53-foot+ trailers in CA
CARB	**Assembly Bill 32 requiring GHG reductions targets and Governor's Executive Order B – 30-15** *www.arb.ca.gov/cc/ab32/ab32.htm and www.gov.ca.gov/news.php?id=18938*	CO_2	GHG emissions reduction goals in 2020	All sectors identified in Climate Change Scoping Plan, including Goods Movement Sector.
SPBP CAAP	**CAAP Measure – HDV1 Performance Standards for On-Road Heavy-Duty Vehicles; Clean Truck Program** *www.cleanairactionplan.org/strategies/trucks/*	All	Phase-in starting in 2008	On-road heavy-duty vehicles that operate at POLB must have 2007 or newer engines by 2012.

APPENDIX B:
CARGO HANDLING EQUIPMENT DATA

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
AGV	Gottwald	CT 70 BN	Electric					2807	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2834	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3069	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3164	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2713	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2852	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2895	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3119	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					1114	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2518	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3102	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2963	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2934	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2960	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2905	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2900	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3035	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3049	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3125	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2918	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2961	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					1899	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3089	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3016	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2864	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3095	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3211	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2902	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3017	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2938	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2372	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2997	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3149	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3038	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2946	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3248	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2827	CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
AGV	Gottwald	CT 70 BN	Electric					3188	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2971	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3030	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2188	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3006	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2929	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3009	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3046	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2936	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3011	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2571	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3105	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2970	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2938	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2977	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3145	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2914	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2888	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2622	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3097	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3045	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2243	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3086	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3140	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3052	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					1390	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3124	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2599	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2729	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3061	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3236	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2772	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2902	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					3030	CHE Electric		
AGV	Gottwald	CT 70 BN	Electric					2081	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2270	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2348	CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Automatic Stacking Crane	ZPMC		Electric					2535	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2010	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2755	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2644	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2889	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2872	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3047	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3043	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2453	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					1953	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2697	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2418	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2868	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2792	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2650	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2819	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3022	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2663	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2880	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2649	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2816	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2812	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3043	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2868	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2723	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2859	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3061	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2608	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3208	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2817	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3290	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2898	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3053	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2855	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2996	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2840	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2794	CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Automatic Stacking Crane	ZPMC		Electric					2707	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3750	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2958	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2728	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3176	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2584	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					3022	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2766	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2373	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					1803	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2206	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2206	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2168	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2226	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					2169	CHE Electric		
Automatic Stacking Crane	ZPMC		Electric					1718	CHE Electric		
Bulldozer	Caterpillar		Diesel			2004	200	1500	CHE Diesel		
Cone Vehicle	Motrec		Diesel	Kubota	V1505-ET04	2016	35	1663	CHE Diesel		
Cone Vehicle	Motrec		Diesel	Kubota	V1505-ET04	2016	35	3065	CHE Diesel		
Cone Vehicle	Motrec		Diesel	Kubota	V1505-ET04	2016	35	3599	CHE Diesel		
Cone Vehicle	Motrec		Diesel	Kubota	V1505-ET04	2016	35	2428	CHE Diesel		
Cone Vehicle	Motrec		Diesel	Kubota	V1505-ET04	2016	35	1638	CHE Diesel		
Crane	Linkbelt	HSP-8015	Diesel	GMC	50435001	1985	334	30	CHE Diesel		
Crane	Terex	RT555	Diesel	Cummins	QSB 6.7	2016	173	282	CHE Diesel		
Crane	American	325	Electric			1980	0	0	CHE Electric		
Crane	Gottwald	330EG	Electric			2006	0	252	CHE Electric		
Crane	ZPMC		Electric					2671	CHE Electric		
Crane	ZPMC		Electric					2626	CHE Electric		
Crane	ZPMC		Electric					2193	CHE Electric		
Crane	ZPMC		Electric					650	CHE Electric		
Electric Pallet Jack	Toyota	8HBE30	Electric	Toyota	AC drive motc	2013	0	446	CHE Electric		
Electric Pallet Jack	Toyota	8HBE30	Electric	Toyota	AC drive motc	2013	0	427	CHE Electric		
Excavator	Caterpillar	345B	Diesel	Caterpillar	3176C	2002	322	0	CHE Diesel		
Excavator	Caterpillar	345CL	Diesel	Caterpillar	C13	2005	371	0	CHE Diesel		
Forklift	Linde	H50D	Diesel	VW	1.75L	2008		250	CHE Diesel		
Forklift	Linde	H50D	Diesel	VW	1.75L	2008		250	CHE Diesel		
Forklift	World	FD100	Diesel	Cummins	QSF3.8	2019	130	250	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	World	FD100	Diesel	Cummins	QSF3.8	2019	130	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	tx-330m	Diesel	Cummins	16 T	2013	170	250	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	XH400RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Taylor	XH400RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Taylor	XH400RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Taylor	XH400RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Taylor	XH400RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Wiggins	W360YXL	Diesel	Volvo	TAD570-72VE	2018	215	250	CHE Diesel		
Forklift	Taylor	27 T	Diesel		27 T	2017	250	150	CHE Diesel		
Forklift	Taylor	27 T	Diesel		27 T	2017	250	150	CHE Diesel		
Forklift	Taylor	27 T	Diesel		27 T	2017	250	150	CHE Diesel		
Forklift	Taylor	27 T	Diesel		27 T	2017	250	150	CHE Diesel		
Forklift	Taylor	X550M	Diesel	Cummins	QSL9	2018	250	250	CHE Diesel		
Forklift	Taylor	X550RC	Diesel	Cummins	QSB6.7	2018	225	250	CHE Diesel		
Forklift	Taylor	X550RC	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	X550RC	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	TX550RC	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Forklift	Taylor	X620RR	Diesel	Cummins	QSL9	2017	250	250	CHE Diesel		
Forklift	Taylor	36 T	Diesel		36 T	2016	250	150	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2017	160	1350	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2014	160	1475	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2014	160	1363	CHE Diesel		
Forklift	Hyster	H155FT	Diesel	Kubota	V3800	2017	106	651	CHE Diesel		
Forklift	Hyster	H155XL2	Diesel	Kubota	V3800	2015	106	5146	CHE Diesel		
Forklift	Hyster	H210HD	Diesel	Kubota	V3800	2015	106	1172	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	Hyster	H155XL2	Diesel	Kubota	V3800	2014	93	1451	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2013	160	1071	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2013	160	1631	CHE Diesel		
Forklift	Hyster	H190D	Diesel	Cummins	QSB6.7	2007	155	595	CHE Diesel	1/1/2014	
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2016	160	1449	CHE Diesel		
Forklift	Hyster	H210D	Diesel	Cummins	QSB4.5	2017	160	1474	CHE Diesel		
Forklift	Hyster	H 210HD	Diesel	Cummins	QSB4.5	2016	160	1141	CHE Diesel		
Forklift	Linde	H80D	Diesel	Duetz	BF6M2012	2007	100	1484	CHE Diesel	1/1/2017	
Forklift	Linde	H80D	Diesel	Duetz	BF6M2012	2007	100	375	CHE Diesel	1/1/2017	
Forklift	Linde	H80D	Diesel	Duetz	BF6M2012	2007	100	676	CHE Diesel	12/1/2015	
Forklift	Taylor		Diesel	Cummins	QSB6.7	2008	200	200	CHE Diesel		
Forklift	Taylor		Diesel	Cummins	QSB6.7	2008	200	200	CHE Diesel		
Forklift	Hyster	XL2	Diesel	Hyster	7.5 T	1995	120	250	CHE Diesel		
Forklift	Caterpillar	DP160N2	Diesel	Perkins	4068/2200	2018	173	96	CHE Diesel		
Forklift	Wiggins	W110YM-12	Diesel	Volvo	TAD570VE	2019	215	180	CHE Diesel		
Forklift	Wiggins	W110YM-12	Diesel	Volvo	TAD570VE	2019	215	209	CHE Diesel		
Forklift	Caterpillar	P33000D	Diesel	Caterpillar	6M60-TLA3T	2008	148	32	CHE Diesel		
Forklift	Caterpillar	P33000D	Diesel	Caterpillar	6M60-TLA3T	2008	148	32	CHE Diesel		
Forklift	Genie	GTH1056	Diesel	Deutz	TCD3.6L4	2015	121	240	CHE Diesel		
Forklift	Genie	GTH1056	Diesel	Deutz	TCD3.6L4	2015	121	280	CHE Diesel		
Forklift	Taylor	TXH-350L	Diesel	Volvo	TAD1371-75V	2013	382	217	CHE Diesel		
Forklift	Taylor	TX360M	Diesel	Volvo	TAD1371-75V	2014	382	263	CHE Diesel		
Forklift	Hyster		Diesel	Kubota		2018	73	420	CHE Diesel		
Forklift	Hyster		Diesel	Kubota		2018	73	48	CHE Diesel		
Forklift	Hyster		Diesel	Kubota		2018	73	466	CHE Diesel		
Forklift	Hyster		Diesel	Kubota		2018	73	308	CHE Diesel		
Forklift	Taylor		Diesel	Cummins	QSB6.7	2018	173	2103	CHE Diesel		
Forklift	Taylor		Diesel	Cummins	QSB6.7	2018	173	2158	CHE Diesel		
Forklift	Clark		Diesel	Duetz	TD3.6L4	2018	74	475	CHE Diesel		
Forklift	Clark		Diesel	Duetz	TD3.6L4	2018	74	231	CHE Diesel		
Forklift	Taylor	X2805	Diesel			2019		2911	CHE Diesel		
Forklift	Taylor	T300M	Diesel	Cummins	QSB5.9	2004	165	1915	CHE Diesel		
Forklift	Taylor	T300M	Diesel	Cummins	QSB5.9	2004	165	1870	CHE Diesel	6/6/2014	
Forklift	Taylor	TXH350L	Diesel	Cummins	QSB6.7	2015		636	CHE Diesel		
Forklift	Taylor	HX360L	Diesel	Cummins	QSB6.7	2018		738	CHE Diesel		
Forklift	Taylor	X-300M	Diesel	Cummins	QSB6.7	2017	220	2314	CHE Diesel		
Forklift	Taylor	X-300M	Diesel	Cummins	QSB6.7	2017	220	1377	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	Taylor	X-300M	Diesel	Cummins	QSB6.7	2017	220	953	CHE Diesel		
Forklift			Diesel			2018	220	953	CHE Diesel		
Forklift	Taylor	T-300M	Diesel			2003	165	1112	CHE Diesel	9/10/2014	
Forklift	Taylor	TX300M	Diesel	Cummins		2014		2052	CHE Diesel		
Forklift	Taylor	TX300M	Diesel	Cummins		2014		1981	CHE Diesel		
Forklift	Taylor	TX300M	Diesel	Cummins		2014		2135	CHE Diesel		
Forklift	Taylor	XL360L	Diesel	Cummins	QSB6.7	2018	173	399	CHE Diesel		
Forklift	Taylor	XL360L	Diesel	Cummins	QSB6.7	2018	173	216	CHE Diesel		
Forklift	JLG Skytrak	8042 T4F	Diesel	Cummins	QSF3.8	2015	110	152	CHE Diesel		
Forklift	JLG Skytrak	8042 T4F	Diesel	Cummins	QSF3.8	2015	110	148	CHE Diesel		
Forklift	Hyster	H360-48HD2	Diesel	Cummins	QSB6.7	2015	164	182	CHE Diesel		
Forklift	Hyster	H360-48HD2	Diesel	Cummins	QSB6.7	2015	164	172	CHE Diesel		
Forklift	Hyster	H360-48HD2	Diesel	Cummins	QSB6.7	2015	164	357	CHE Diesel		
Forklift	Hyster	H360-48HD2	Diesel	Cummins	QSB6.7	2015	164	344	CHE Diesel		
Forklift	Taylor		Diesel	Cummins	11.5 T	2002	173	2050	CHE Diesel	8/25/2014	
Forklift	Taylor	THD360L	Diesel	Cummins	11.5 T	2002	173	1912	CHE Diesel	8/25/2014	
Forklift	Taylor	TX360M	Diesel	Cummins	11.5 T	2007		88	CHE Diesel	12/1/2011	
Forklift	Taylor	TH350L	Diesel	Cummins	11.5 T	2005	150	252	CHE Diesel	8/25/2014	
Forklift	Taylor	TH350L	Diesel	Cummins	11.5 T	2005	150	673	CHE Diesel	8/25/2014	
Forklift	Yale	GLP100	Diesel	Vortec	5 T	2012	117	53	CHE Diesel		
Forklift	Taylor	T520M	Diesel	Cummins	25 ton	2008		96	CHE Diesel	12/1/2011	
Forklift	Taylor	X550M	Diesel	Isuzu	55000 lbs	2015	100	19	CHE Diesel		
Forklift	Doosan		Diesel	Yanmar		2019	43	150	CHE Diesel		
Forklift		4,500 lbs	Diesel			1996	50	10	CHE Diesel		
Forklift	Hyster		Diesel			1995	60	520	CHE Diesel		
Forklift	Hyster	H210HD	Diesel	Cummins	QSB6.7-155	2002	155	200	CHE Diesel	1/1/2014	
Forklift	Hyster	H210HD	Diesel	Perkins	1106C-E60TA	2003	155	225	CHE Diesel	1/1/2014	
Forklift	Hyster	H210HD	Diesel	Perkins	1106C-E60TA	2003	155	225	CHE Diesel	1/1/2014	
Forklift	Hyster	H210HD	Diesel	Perkins	1106C-E60TA	2003	155	225	CHE Diesel	1/1/2014	
Forklift	Hyster	H210HD	Diesel	Perkins	1106C-E60TA	2003	155	225	CHE Diesel	1/1/2013	
Forklift	Taylor	X360M	Diesel		32000 lbs	2015	173	256	CHE Diesel		
Forklift	Taylor		Diesel	Cummins	32000 lbs	2015	173	1822	CHE Diesel		
Forklift	Taylor	X360M	Diesel	Cummins	32000 lbs	2015	173	727	CHE Diesel		
Forklift	Toyota	7FBEU15	Electric	Toyota	AC drive motc	1995	0	676	CHE Electric		
Forklift	Toyota		Electric	Taylor-Dunn	DC Drive Mot	1995	0	399	CHE Electric		
Forklift	Toyota	7FBEU20	Electric	Toyota	AC drive motc	1995	0	468	CHE Electric		
Forklift	Toyota	7FBEU15	Electric	Toyota	AC drive motc	2013	0	276	CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	Raymond		Electric	Raymond	AC drive motc	2012	0	93	CHE Electric		
Forklift	Hyster	N40ZRS2	Electric					11	CHE Electric		
Forklift	Hyster	N40ZRS2	Electric					48	CHE Electric		
Forklift			Electric			2006	0	0	CHE Electric		
Forklift	Mitshubishi	K25	Gasoline	Nissan	6,000 lb	2013	59	838	CHE Gasoline		
Forklift	Mitshubishi	K25	Gasoline	Nissan	6,000 lb	2013	59	637	CHE Gasoline		
Forklift	Mitshubishi	K25	Gasoline	Nissan	6,000 lb	2013	59	905	CHE Gasoline		
Forklift	Mitshubishi	K25	Gasoline	Nissan	6,000 lb	2013	59	874	CHE Gasoline		
Forklift	Mitshubishi	K25	Gasoline	Nissan	7000 lb	2013	59	814	CHE Gasoline		
Forklift	Mitshubishi	K25	Gasoline	Nissan	7000 lb	2013	59	304	CHE Gasoline		
Forklift	Mitsubishi	FG40N	Gasoline			2016		1021	CHE Gasoline		
Forklift	Mitsubishi	H80XM	Gasoline			2002		965	CHE Gasoline		
Forklift	Mitsubishi	FG40N	Gasoline	Nissan	8,000 lb	2012	59	260	CHE Gasoline		
Forklift	Mitsubishi	FG40N	Gasoline	Mitsubishi	TB45	2011	72	378	CHE Gasoline		
Forklift	Mitsubishi	FG40N	Gasoline	Mitsubishi	TB45	2011	72	584	CHE Gasoline		
Forklift	Mitsubishi	FG35N	Gasoline	Mitsubishi	TB45	2016	72	226	CHE Gasoline		
Forklift	Mitsubishi	FG35N	Gasoline	Mitsubishi	TB45	2016	72	211	CHE Gasoline		
Forklift	Mitsubishi	FG35N	Gasoline	Mitsubishi	TB45	2016	72	266	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		6,000 lb	2013		317	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		6,000 lb	2013		387	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		6,000 lb	2013		202	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		6,000 lb	2013		167	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		6,000 lb	2013		457	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		7,000 lb	2013		257	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		7,000 lb	2013		657	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		7,000 lb			633	CHE Gasoline		
Forklift	Mitsubishi	K25	Gasoline		7,000 lb	2013		448	CHE Gasoline		
Forklift	Mitsubishi	FG40N	Gasoline		8,000 lb	2012		340	CHE Gasoline		
Forklift	Toyota	42-6FGCU18	LPG	Toyota	Toyota 4Y	1995	57	54	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y ECS	2013	57	373	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y ECS	2013	57	313	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y ECS	2014	57	191	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y ECS	2014	57	0	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Mitsubishi	FG45K1	LPG	Nissan	5 T	2006	117	300	CHE Propane		
Forklift	Toyota	5FGC25	LPG		5 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	42-5FG25	LPG		3 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	5FGC25	LPG		5 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	42-5FG25	LPG		3 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	5FGC25	LPG		5 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	5FGC25	LPG		5 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	42-5FG25	LPG		3 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	42-5FG25	LPG		3 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Clark	CGP25	LPG	Mitsubishi	4G64	1999	50	250	CHE Propane		7/4/1905
Forklift	Clark	CGP25	LPG	Mitsubishi	4G64	1999	50	250	CHE Propane		7/4/1905
Forklift	Toyota	42-4FGC25	LPG		5 T	1987	54	150	CHE Propane		7/4/1905
Forklift	Toyota	42-4FGC25	LPG		3 T	1987	54	0	CHE Propane		7/4/1905
Forklift	Toyota	7FGC070	LPG	Impco	Vortec	2008	95	300	CHE Propane		
Forklift	Toyota	7FGC070	LPG	Impco	Vortec	2008	95	200	CHE Propane		
Forklift	Toyota	7FGC070	LPG	Impco	Vortec	2008	95	200	CHE Propane		
Forklift	Caterpillar	GP25N5	LPG	GCT	JNFXB02.548I	2018	62	80	CHE Propane		8/21/2013
Forklift	Caterpillar	GP25N5	LPG	GCT	JNFXB02.548I	2018	62	100	CHE Propane		8/21/2013
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2013	96	122	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2013	96	46	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2013	96	120	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2014	96	117	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2014	96	47	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2014	96	222	CHE Propane		
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2014	96	264	CHE Propane		
Forklift	Caterpillar	GP30	LPG	Mitsubishi	3MCFB2350M	2003	57	168	CHE Propane		8/21/2013
Forklift	Caterpillar	GP30	LPG	Mitsubishi	3MCFB2350M	2003	57	184	CHE Propane		8/6/2013
Forklift	Clark	C25L	LPG	GM	DPSIB2.7GLP	2013	96	128	CHE Propane		
Forklift			LPG				84	208	CHE Propane		
Forklift			LPG		QSB 6.7	2013	74	136	CHE Propane		
Forklift			LPG		QSB 6.7	2013	74	86	CHE Propane		
Forklift			LPG		QSB 6.7	2013	74	190	CHE Propane		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift			LPG		QSB 6.7	2013	74	192	CHE Propane		
Forklift			LPG		QSB 6.7	2013	74	173	CHE Propane		
Forklift	Hyster	H60FT	LPG	Mazda	2.2	2014	46	89	CHE Propane		
Forklift	Hyster	H60FT	LPG	Mazda	2.2	2014	46	46	CHE Propane		
Forklift	Hyster	H60FT	LPG	Mazda	2.2	2014	46	113	CHE Propane		
Forklift	Hyster	H60FT	LPG	Mazda	2.2	2014	46	30	CHE Propane		
Forklift	Hyster	H60FT	LPG	Mazda	2.2	2014	46	90	CHE Propane		
Forklift	Mitsubishi	FG30K	LPG	Mitsubishi	4G64	2000		221	CHE Propane		
Forklift	Hyster	Fortis 80	LPG	Kubota	WG3800	2014	46	366	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	102	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	183	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	7	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	131	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	60	CHE Propane		
Forklift	Hyster	H60FT	LPG	Kubota	WG3800	2015	46	93	CHE Propane		
Forklift	Hyster	H80FT	LPG	Kubota	WG3800	2015	98	386	CHE Propane		
Forklift	Hyster	H80FT	LPG	Kubota	WG3800	2015	98	431	CHE Propane		
Forklift	Hyster	H80FT	LPG	Kubota	WG3800	2015	98	247	CHE Propane		
Forklift	Hyster	H100XM	LPG	Vortec	5 T	2002	117	340	CHE Propane		
Forklift	Hyster	H100XM	LPG	Vortec	5 T	2002	117	307	CHE Propane		
Forklift	Yale	GLP100	LPG	Vortec	5 T	2005	117	483	CHE Propane		
Forklift	Yale	GLP100	LPG	Vortec	5 T	2005	117	447	CHE Propane		
Forklift	Hyster	H80XM	LPG	GM	6 cyl	2004	94	120	CHE Propane		
Forklift	Caterpillar	GP30K	LPG		6,000 lb	2000	62	191	CHE Propane		
Forklift	Caterpillar	GP30K	LPG		6,000 lb	2000	62	301	CHE Propane		
Forklift	Caterpillar	PG55N1	LPG	GCT	12000 lbs	2017	141	241	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y	2018	57	1375	CHE Propane		
Forklift	Toyota	8FGU30	LPG	Toyota	4Y	2010	57	118	CHE Propane		
Forklift	Hyster	S155XL	LPG		11.5 T	2000	100	200	CHE Propane		
Forklift	Hyster	S155XL	LPG		11.5 T	2000	100	200	CHE Propane		
Forklift	Komatsu		LPG			2004	50	1500	CHE Propane		
Forklift	Hyster	S80XM	LPG		7.5T	2002	80	500	CHE Propane		
Forklift	Hyster	S80XM	LPG		7.5T	2002	80	500	CHE Propane		
Forklift	Hyster	S80XM	LPG		7.5T	2002	80	500	CHE Propane		
Forklift	Hyster	S80XM	LPG		7.5T	2002	80	500	CHE Propane		
Forklift	Hyster	S80XM	LPG		7.5T	2002	80	500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift	Hyster	S120XM	LPG		5 T	2002	50	1500	CHE Propane		
Forklift			LPG			1995	120	624	CHE Propane		
Forklift	Hyster	H35xm	LPG	Case	5 T	1995	45	52	CHE Propane		
Forklift	Toyota	7Fgu25	LPG	Toyota	5 T	2004	50	52	CHE Propane		
Forklift	Hyster	H155XL	LPG	Perkins	1004-4	2012	103	150	CHE Propane		
Forklift	Clark	C25L	LPG		5000 lbs	2015	75	460	CHE Propane		
Forklift	Clark	C25L	LPG		5000 lbs	2015	75	443	CHE Propane		
Forklift	Clark	C25L	LPG	Cummins	5000 lbs	2010	70	1020	CHE Propane		
Forklift	Clark	C25L	LPG		5000 lbs	2015	70	1042	CHE Propane		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2782	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2816	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2680	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2806	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2765	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2728	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2938	CHE Diesel		
Hybrid RTG	MIT-Paceco	KTA 19	Diesel	Caterpillar	C7.1	2016	250	2889	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2719	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2659	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2852	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	1848	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2590	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2791	CHE Diesel		
Hybrid RTG	Paceco-Mitsu		Diesel	Caterpillar	C7.1	2016	250	2683	CHE Diesel		
Hybrid RTG	ZPMC	RC50.8/66	Diesel	Cummins	QSB5-G11	2019	169	572	CHE Diesel		
Hybrid RTG	ZPMC	RC50.8/66	Diesel	Cummins	QSB5-G11	2019	169	413	CHE Diesel		
Hybrid RTG	ZPMC	RC50.8/66	Diesel	Cummins	QSB5-G11	2019	169	687	CHE Diesel		
Hybrid RTG	ZPMC	RC50.8/66	Diesel	Cummins	QSB5-G11	2019	169	809	CHE Diesel		
Hybrid RTG	ZPMC	RC50.8/66	Diesel	Cummins	QSB5-G11	2019	169	680	CHE Diesel		
Loader	Catepillar	950B	Diesel	Caterpillar		1985	200	250	CHE Diesel		
Loader	Case	521F	Diesel			2019	113	47	CHE Diesel		
Loader	Yanmar	V10	Diesel			2019	74	52	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Loader	Caterpillar	914M	Diesel			2019	96	34	CHE Diesel		
Loader	Caterpillar	908M	Diesel			2017	73	27	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2015	418	1133	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2015	418	1440	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2015	418	722	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2017	420	1444	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2020	420	415	CHE Diesel		
Loader	Caterpillar	980K	Diesel	Caterpillar	C13	2012	402	755	CHE Diesel		
Loader	Caterpillar	980M	Diesel	Caterpillar	C13	2015	418	1321	CHE Diesel		
Loader	Caterpillar	972M	Diesel	Caterpillar		2017	272	1510	CHE Diesel		
Loader	Kubota	R520S	Diesel			2003	50	1500	CHE Diesel		
Loader	CAT	982-M	Diesel		C-13	2014		3000	CHE Diesel		
Loader	CAT	980-M	Diesel		C-13	2014		3000	CHE Diesel		
Man Lift	JLG	600S	Diesel	Perkins	404-22T	2009	62	321	CHE Diesel		
Man Lift	JLG	1200SJP	Diesel	Deutz	TD2011L04	2008	75	499	CHE Diesel		
Man Lift	JLG	860SJ	Diesel			2013	62	284	CHE Diesel		
Man Lift	JLG	185SJ	Diesel	Deutz	TCD 3.6L4	2017	100	56	CHE Diesel		
Man Lift	JLG	1500SJ	Diesel			2013	74	54	CHE Diesel		
Man Lift	JLG	1350SJP	Diesel	Deutz	TCD2.9L4	2017	99	761	CHE Diesel		
Man Lift	JLG		Diesel			2006		13	CHE Diesel		
Man Lift	JLG		Diesel			2013		88	CHE Diesel		
Man Lift	JLG		Diesel			2000		2	CHE Diesel		
Man Lift	JLG		Diesel			2012		7	CHE Diesel		
Man Lift	JLG	600S	Diesel	Deutz	TD2.9L4	2014	67	302	CHE Diesel		
Man Lift	Genie		Diesel			2011	48	250	CHE Diesel		
Man Lift	Genie	S-85	Diesel			2009			CHE Diesel		
Man Lift	JLG	193200	Electric	JLG	AC drive motc	2001	0	0	CHE Electric		
Man Lift	JLG	1930ES	Electric	JLG	AC drive motc	2003	0	0	CHE Electric		
Man Lift	Genie	S60	Gasoline	Ford	LRG425-EFI	2000	82	42	CHE Gasoline		
Man Lift	JLG	600S	Gasoline	Ford	LRG425-EFI	2004	82	100	CHE Gasoline		
Material Handler	Caterpillar	345CMH	Diesel	Caterpillar	C13	2005	371	350	CHE Diesel	9/15/2011	
Material Handler	Caterpillar	375-L	Diesel	Caterpillar	C15	2008	717	825	CHE Diesel	6/22/2011	
Material Handler	Caterpillar	375L	Electric	Reliance		1995	0	0	CHE Electric		
Miscellaneous	Peco		Diesel	Kubota		2010	13	54	CHE Diesel		
Miscellaneous	Peco		Diesel	Kubota		2010	13	1705	CHE Diesel		
Rail pusher	RailKing	RK 330	Diesel	Cummins	QSB6.7 195	2013	195	320	CHE Diesel		
Rail pusher	TRKMOB	Titan T4	Diesel			2013	150	612	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Rail pusher	TRKMOB	Titan T4i	Diesel			2013	260	250	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2005	1043		CHE Diesel	3/15/2013	
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2003	946	1045	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2003	946	1168	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2004	1043	1285	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2004	1043	1226	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2004	1043	1377	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2004	1043	1800	CHE Diesel	4/26/2013	
Rub-trd Gantry Crane			Diesel			2002		1211	CHE Diesel	4/26/2013	
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2005	1043	1354	CHE Diesel	4/24/2013	
Rub-trd Gantry Crane	ZPMC	RC50.8/66	Diesel	Caterpillar	3412	2005	1043	1227	CHE Diesel	4/22/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	4161	CHE Diesel	12/27/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	3316	CHE Diesel	11/22/2013	
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4066	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4211	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4913	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	5192	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4624	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	4883	CHE Diesel	2/26/2014	
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4605	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4814	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4336	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4851	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4420	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4744	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	4770	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel	CAT	C15	2013	515	5278	CHE Diesel		
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1999	615	542	CHE Diesel	1/31/2014	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1999	615	3997	CHE Diesel	6/24/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1999	615	3001	CHE Diesel	1/31/2014	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1999	615	2864	CHE Diesel	1/31/2014	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	2064	CHE Diesel	11/4/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	4083	CHE Diesel	11/1/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	2703	CHE Diesel	10/21/2013	
Rub-trd Gantry Crane	ZPMC	RC40.6/64	Diesel	Cummins	KTA19	1998	615	12	CHE Diesel	1/27/2014	
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel			2020	515	966	CHE Diesel		
Rub-trd Gantry Crane	Paceco	RT 4023-81-	Diesel			2020	515	1366	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Side pick	Taylor	TECSP157/8	Diesel	Cummins	B5.9C	2002	205	84	CHE Diesel	3/2/2013	
Side pick	Taylor	TECSP157/8	Diesel	Cummins	QSBB5.9C	2006	205	184	CHE Diesel	5/2/2013	
Side pick	Taylor	TECSP157/8	Diesel	Cummins	QSBB5.9C	2006	205	279	CHE Diesel	5/2/2013	
Side pick	Taylor	TECSP157-8	Diesel	Cummins	B5.9C	2000	205	0	CHE Diesel	6/21/2013	
Side pick	Taylor	TECSP157-8	Diesel	Cummins	QSB5.9	2003	205	0	CHE Diesel	6/6/2013	
Side pick	Taylor	TECSP157-8	Diesel	Cummins	QSB5.9	2005	205	0	CHE Diesel	6/6/2013	
Side pick			Diesel			2017	205	1397	CHE Diesel		
Skid Steer Loader	Caterpillar	226D	Diesel		C2.2	2015	67	537	CHE Diesel		
Skid Steer Loader	CAT	226-B	Diesel			2011		500	CHE Diesel		
STS Crane			Electric					134	CHE Electric		
STS Crane			Electric					61	CHE Electric		
STS Crane			Electric					1856	CHE Electric		
STS Crane			Electric					2171	CHE Electric		
STS Crane			Electric					2231	CHE Electric		
STS Crane			Electric					1775	CHE Electric		
STS Crane			Electric					3078	CHE Electric		
STS Crane			Electric					2149	CHE Electric		
STS Crane			Electric					3892	CHE Electric		
STS Crane			Electric					4088	CHE Electric		
STS Crane			Electric					3738	CHE Electric		
STS Crane			Electric					3500	CHE Electric		
STS Crane			Electric					323	CHE Electric		
STS Crane			Electric					355	CHE Electric		
STS Crane			Electric					0	CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane	ZPMC		Electric					241	CHE Electric		
STS Crane	ZPMC		Electric					1828	CHE Electric		
STS Crane	ZPMC		Electric					2222	CHE Electric		
STS Crane	ZPMC		Electric					2200	CHE Electric		
STS Crane	ZPMC		Electric					2317	CHE Electric		
STS Crane	ZPMC		Electric					2300	CHE Electric		
STS Crane	ZPMC		Electric					2120	CHE Electric		
STS Crane	ZPMC		Electric					1810	CHE Electric		
STS Crane	ZPMC		Electric					1896	CHE Electric		
STS Crane	ZPMC		Electric					1821	CHE Electric		
STS Crane	ZPMC		Electric					1424	CHE Electric		
STS Crane	ZPMC		Electric					780	CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
STS Crane			Electric						CHE Electric		
Sweeper	TYMCO		Diesel	Cummins		2015	200	878	CHE Diesel		
Sweeper	TYMCO		Diesel	John Deere		2015	75	878	CHE Diesel		
Sweeper	Schwarze	S3481	Diesel	Isuzu	4HEZXS	2002	190	387	CHE Diesel		
Sweeper	Elgin	Pelican	Diesel	John Deere	4045TE270	2006	114	0	CHE Diesel		
Sweeper	Elgin	Crosswind	Diesel			2019	220	20	CHE Diesel		
Sweeper	Tennant	Centurion	Diesel			2005	180		CHE Diesel		
Sweeper	Tymco		Diesel					0	CHE Diesel		
Sweeper	Peterbuilt		Diesel					972	CHE Diesel		
Sweeper	Tymco		Diesel					695	CHE Diesel		
Sweeper	Tymco	600	Diesel			2018	210	500	CHE Diesel		
Sweeper	Johnson	VS562	Diesel	Cummins	B6.7	2019	300	1886	CHE Diesel		
Sweeper	Armadillo		Diesel	Kubota		2019	34	260	CHE Diesel		
Sweeper	Tennant	5700XP	Electric	Tennant	AC drive motor		0	0	CHE Electric		
Sweeper	Tennant	800	LPG	Tennant	Gas/LP Ford 2.3 liter			43	CHE Propane		
Sweeper	Edgen		LPG			1982	135	30	CHE Propane		
Sweeper	Tennant	6650XP	LPG	GM		2004	55	20	CHE Propane		
Sweeper	Nilfisk	SC8000	LPG	Kubota		2016	47	70	CHE Propane		
Sweeper	Nilfisk	SC8000	LPG	Kubota		2016	47	41	CHE Propane		
Sweeper	Advance		LPG			2015	114	175	CHE Propane		
Sweeper	Tennant	S30	LPG	GM	1.6L	2013	55	50	CHE Propane		
Sweeper	Tennant		LPG			2005	50	200	CHE Propane		
Top handler	TAYLOR	THDC 955	Diesel	Cummins	M11-C	2000	275	50	CHE Diesel	1/1/2014	
Top handler	Taylor		Diesel	Volvo	TAD 1360VE	2011	343	78	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD 1360VE	2011	343	339	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD 1360VE	2011	343	340	CHE Diesel		
Top handler	Taylor		Diesel		TAD 1360VE	2013	343	802	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	1052	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2119	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2085	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2669	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	3068	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	3061	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	3048	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2595	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2213	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	655	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	3019	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2015	382	2712	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2900	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2387	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2978	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	3146	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2499	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2685	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	3193	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2798	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2171	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	3039	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2197	CHE Diesel		
Top handler	Taylor		Diesel	Volvo	TAD1371-75V	2016	382	2183	CHE Diesel		
Top handler	Taylor		Diesel			2019	382	2839	CHE Diesel		
Top handler	Taylor		Diesel			2019	382	1327	CHE Diesel		
Top handler	Taylor		Diesel			2019	382	1882	CHE Diesel		
Top handler	Taylor		Diesel			2019	382	1238	CHE Diesel		
Top handler	Taylor		Diesel			2019	382	1223	CHE Diesel		
Top handler	Taylor		Diesel			2020	382	41	CHE Diesel		
Top handler	Taylor		Diesel			2020	382	22	CHE Diesel		
Top handler	Taylor		Diesel			2020	382	30	CHE Diesel		
Top handler	Taylor		Diesel			2020	382	16	CHE Diesel		
Top handler	Taylor		Diesel			2020	382	67	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1957	CHE Diesel		
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2006	335	821	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2006	335	1220	CHE Diesel	1/28/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2005	330	1448	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2006	335	1405	CHE Diesel	2/13/2013	

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2005	335	93	CHE Diesel	12/1/2012	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSMII-C	2005	335	949	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300		CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	1618	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	965	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	300	913	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	300	1369	CHE Diesel	4/27/2013	
Top handler	Taylor		Diesel			2011	330	1226	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	2046	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1781	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1706	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1721	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1829	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	2115	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1785	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1590	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1700	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1837	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1681	CHE Diesel		
Top handler	Taylor		Diesel			2011	330	1510	CHE Diesel		
Top handler	Taylor		Diesel			2012	330	1857	CHE Diesel		
Top handler	Taylor		Diesel			2018		2129	CHE Diesel		
Top handler	Taylor		Diesel			2018		1866	CHE Diesel		
Top handler	Taylor		Diesel			2019		2620	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	829	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	912	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1479	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	976	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1933	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	2125	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1143	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1172	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1875	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	837	CHE Diesel		
Top handler	Taylor	XLC976	Diesel	Volvo	TAD1371VE	2017	285	1024	CHE Diesel		
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2001	275	1970	CHE Diesel	4/24/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2001	275	1705	CHE Diesel	4/29/2013	

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2001	275	1944	CHE Diesel	4/25/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2001	275	934	CHE Diesel	4/25/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	994	CHE Diesel	4/30/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2003	300	1283	CHE Diesel	4/29/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2003	300	1143	CHE Diesel	4/29/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2003	300		CHE Diesel	4/19/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	300	1201	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	300	2162	CHE Diesel	4/22/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	335	789	CHE Diesel	4/22/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	335	1828	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2004	335	2376	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2007	275	939	CHE Diesel	12/1/2012	
Top handler	Taylor	THDC 955	Diesel	Cummins	M11-C	2000	275	1237	CHE Diesel	7/31/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	2578	CHE Diesel	12/1/2012	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	1004	CHE Diesel	12/1/2012	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2002	300	1448	CHE Diesel	4/27/2013	
Top handler	Taylor	THDC 955	Diesel	Cummins	QSM11-C	2007	275	1403	CHE Diesel	12/1/2012	
Top handler	Taylor		Diesel			2014		2173	CHE Diesel		
Top handler	Taylor		Diesel			2014		1897	CHE Diesel		
Top handler	Taylor		Diesel			2014		123	CHE Diesel		
Top handler	Taylor	XLC-976	Diesel	Cummins		2015		2401	CHE Diesel		
Top handler	TXLC 976		Diesel			2015		2279	CHE Diesel		
Top handler	TXLC 976		Diesel			2015		2314	CHE Diesel		
Top handler	TXLC 976		Diesel			2015		2938	CHE Diesel		
Top handler	TXLC 976		Diesel			2015		1883	CHE Diesel		
Top handler	TXLC 976		Diesel			2015		2826	CHE Diesel		
Top handler	TXLC 976		Diesel			2018		2798	CHE Diesel		
Top handler	TXLC 976		Diesel			2018		2514	CHE Diesel		
Top handler	TXLC 976		Diesel			2018		3168	CHE Diesel		
Top handler	TXLC 976		Diesel			2019		2992	CHE Diesel		
Top handler	TXLC 976		Diesel			2019		2944	CHE Diesel		
Top handler	TXLC 976		Diesel			2019		2113	CHE Diesel		
Top handler	TXLC 976		Diesel			2019		3106	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		1104	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		873	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		1160	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		986	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler	TXLC 976		Diesel			2020		1031	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		874	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		1079	CHE Diesel		
Top handler	TXLC 976		Diesel			2020		658	CHE Diesel		
Top handler	Hyster	HY	Diesel	Cummins	QSL9 350	2013	335	0	CHE Diesel		
Top handler	Hyster	HY	Diesel	Cummins	QSL9 350	2013	335	55	CHE Diesel		
Top handler	Hyster	HY	Diesel	Cummins	QSL9 350	2013	335	1035	CHE Diesel		
Top handler	Hyster	HY	Diesel	Cummins	QSL9-350	2013	350	0	CHE Diesel		
Top handler	Hyster	RS 45-31CH	Diesel	Cummins	QSL9-350	2013	350	193	CHE Diesel		
Top handler	Taylor	THDC-9555	Diesel	Cummins	QSM-11	2002	300	577	CHE Diesel	4/11/2012	
Top handler	Taylor	THDC-9555	Diesel	Cummins	QSM-11	2004	300	277	CHE Diesel	3/29/2012	
Top handler	Taylor	THDC-9555	Diesel	Cummins	QSM-11	2005	300	555	CHE Diesel	4/26/2012	
Top handler	Taylor	THDC-9555	Diesel	Cummins	LT 10-C	2006	250	490	CHE Diesel	4/9/2012	
Top handler	Taylor	TXC976	Diesel			2008		1153	CHE Diesel	2/1/2011	
Top handler	Taylor	TXC976	Diesel			2008		762	CHE Diesel	2/1/2011	
Top handler	Taylor	TXC976	Diesel			2008		966	CHE Diesel	2/1/2011	
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2290	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2703	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2699	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2617	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3018	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3245	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2079	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2641	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2652	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2676	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2856	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3108	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2811	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2924	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	1911	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3026	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3618	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2811	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3010	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2345	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3139	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2617	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3371	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2694	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2829	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3177	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2864	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2552	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2813	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3683	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2800	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3513	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	3755	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2187	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2137	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2973	CHE Diesel		
Top handler	Taylor	TXLC976	Diesel	Volvo	TAD-1360VE	2012	343	2856	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3004	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3061	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	4026	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3291	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3770	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	4370	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3740	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3791	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	3492	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2017	388	2730	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2018	388	2910	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2018	388	4190	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2018	388	3046	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2018	388	3704	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2019	388	3245	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2019	388	2476	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2020	388	955	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2020	388	893	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2020	388	778	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2020	388	106	CHE Diesel		
Top handler	Taylor	XLC 976	Diesel	Volvo	TAD-1371VE	2020	388	156	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Top handler			Electric			2019			CHE Electric		
Top handler			Electric			2019			CHE Electric		
Tractor	Kubota	M59	Diesel	Kubota	2403M	2009	59	80	CHE Diesel		
Tractor	Mitsubishi	FG30BLP	LPG	Mitsubishi	N/A	1996	57	154	CHE Propane		8/6/2013
Tractor	United Tracti	SM-50F	LPG	Ford	CSG6491	1996	101	200	CHE Propane		8/22/2012
Tractor	United Tracti	SM-50F	LPG	Ford	CSG6491	1996	101	200	CHE Propane		8/23/2012
Tractor	United Tracti	SM-50F	LPG	Ford	CSG6491	1996	101	160	CHE Propane		8/21/2012
Tractor	United Tracti	SM-50F	LPG	Ford	CSG6491	1996	101	198	CHE Propane		4/27/2010
Tractor	United Tracti	SM-50F	LPG	Ford	CSG6491	1996	101	200	CHE Propane		2/10/2016
Tractor	United Tracti	SM-50-F	LPG			1997	101	2	CHE Propane		7/13/2010
Truck	Terex	TR45	Diesel	Cummins	QSK19	2009	525	222	CHE Diesel		
Truck	Terex	TR45	Diesel	Cummins	QSK19	2009	525	1054	CHE Diesel		
Truck	Internationa	Transtar	Diesel					1607	CHE Diesel		
Truck	Internationa	Transtar	Diesel					1599	CHE Diesel		
Truck	Internationa	Workstar	Diesel					774	CHE Diesel		
Truck	Freightliner	Combo	Diesel			2016		318	CHE Diesel		
Truck	Kenworth	Combo	Diesel						CHE Diesel		
Truck	Ford	F700	Diesel						CHE Diesel		
Truck	Ford	F750	Diesel	Ford	6.7	2016	270	1293	CHE Diesel		
Truck	Taylor-Dunn	B0-210-36	Electric	Taylor-Dunn	DC Drive Mot	2008	0	10	CHE Electric		
Truck	Taylor-Dunn	B0-210-36	Electric	Taylor-Dunn	DC Drive Mot	2008	0		CHE Electric		
Truck	Taylor-Dunn	MX-016-00	Electric	Taylor-Dunn	DC Drive Mot	2008	0	78	CHE Electric		
Truck	Taylor-Dunn	MX-016-00	Electric	Taylor-Dunn	DC Drive Mot	2009	0	71	CHE Electric		
Truck	Taylor-Dunn	MX-016-00	Electric	Taylor-Dunn	DC Drive Mot	2009	0	69	CHE Electric		
Truck	Taylor-Dunn	B5-440-48	Electric	Taylor-Dunn	DC Drive Mot	2016	0	110	CHE Electric		
Truck	Freightlinger	ISB6.7	Diesel	Cummins	M2106	2011	300	350	CHE On Road Diesel		
Truck	McClellan		Diesel	Cummins	L9	2018	177	931	CHE On Road Diesel	1/21/2014	
Truck	Sterline		Diesel			2006	300	936	CHE On Road Diesel	1/21/2014	
Truck	Ford	F-750	Diesel	Caterpillar	3126	2006	210	250	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB6.7	2019	225	250	CHE Diesel		
Yard tractor	Capacity	6BTA	Diesel	Cummins	ISB6.7	2013	200	963	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1853	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1161	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1390	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1358	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1774	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1330	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1641	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1672	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	331	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1609	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	757	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1224	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	0	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1777	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1603	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1314	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1795	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1625	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1416	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1398	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1815	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1523	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	1425	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2015	173	977	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1962	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1994	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1844	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1836	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1351	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2134	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2127	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2055	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1922	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2033	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1685	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2017	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2132	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1458	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1714	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2172	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2159	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2353	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1717	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2310	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1605	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2518	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2093	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2246	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	2144	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2018	173	1889	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1501	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1388	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2147	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2140	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1671	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2318	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2122	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1583	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1209	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2540	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2054	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1707	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1810	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1542	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1456	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1873	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2575	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1530	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2355	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2286	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2406	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2195	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2355	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2359	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2221	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1881	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1909	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2310	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2144	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2375	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1861	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2175	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2332	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2421	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1575	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2519	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	827	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2305	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2164	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2397	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2318	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2434	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2430	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2279	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2488	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2438	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2374	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2333	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2358	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2334	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2216	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2457	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2363	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2139	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2216	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2121	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1564	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1325	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1609	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1662	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2175	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2053	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1723	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	2304	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1367	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1951	CHE Diesel		
Yard tractor	Kalmar		Diesel	Cummins	QSB6.7	2019	173	1021	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	198	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	236	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2031	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	1963	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2012	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2369	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2036	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	1797	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	1943	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	1815	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	1811	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2233	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2845	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	491	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2212	CHE Diesel		
Yard tractor	Kalmar/Otta	T2	Diesel	Cummins	QSB6.7225	2016	225	2279	CHE Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Edelbrock	454 Engine	2017	204		CHE Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Edelbrock	454 Engine	2017	204	712	CHE Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Edelbrock	454 Engine	2017	204	283	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1270	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1571	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2304	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1514	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	741	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	875	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1201	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	819	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	948	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1334	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1517	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2088	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2131	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	695	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2049	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2550	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1904	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2088	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2211	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1796	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2136	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1310	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2031	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1541	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2171	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1581	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	581	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	283	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	589	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	671	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1210	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1718	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1998	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1213	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2217	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1818	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2213	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1019	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1981	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2122	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2118	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2226	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2954	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1812	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2203	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1613	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	1918	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2063	CHE Diesel		
Yard tractor	Kalmar/Otta		Diesel	Cummins	6.7 QSB	2016	225	2202	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2864	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	3174	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2635	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	3057	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	368	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2625	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2453	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	3122	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2899	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	3070	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2077	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	3205	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2507	CHE Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	QSB 6.7	2016	225	2968	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2019	225	2889	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2019	225	2003	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2627	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2006	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2446	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2798	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2796	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2735	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2601	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2654	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2859	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2871	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2531	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2828	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	2144	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	4x2	Diesel	Cummins	QSB 6.7	2020	225	0	CHE Diesel		
Yard tractor	Ottawa	T2	Diesel	Cummins	QSB6.7 Tier 4	2015	164	1091	CHE Diesel		
Yard tractor	Ottawa	T2	Diesel	Cummins	QSB6.7 Tier 4	2015	164	600	CHE Diesel		
Yard tractor	BYD		Electric					552	CHE Electric		
Yard tractor	BYD		Electric					152	CHE Electric		
Yard tractor	BYD		Electric					992	CHE Electric		
Yard tractor	BYD		Electric					311	CHE Electric		
Yard tractor	BYD		Electric					648	CHE Electric		
Yard tractor	BYD		Electric					427	CHE Electric		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	344	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	952	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	781	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	915	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1012	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	952	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1127	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	845	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	319	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1024	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1080	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	926	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	777	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1135	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	850	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	93	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	840	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	989	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	774	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	774	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1239	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	946	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	953	CHE Gasoline		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1039	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	964	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	224	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	716	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	781	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1207	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	882	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	933	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	866	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	887	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	46	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	864	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	883	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1265	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	832	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1854	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1388	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1745	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1440	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1563	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1283	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1474	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	901	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1223	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1829	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1624	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1408	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1871	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1561	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1389	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1519	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1813	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2018	335	1243	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	0	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1659	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	2097	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1920	CHE Gasoline		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	2333	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1748	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1680	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1595	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2019	335	1583	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	973	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1248	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1170	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1221	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1157	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1335	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1255	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1097	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	650	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1209	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1071	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1308	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1016	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1080	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1082	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1500	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1044	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1363	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	619	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1219	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1471	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	573	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	733	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	677	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1000	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	685	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	698	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	873	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	806	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1056	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	597	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	801	CHE Gasoline		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	970	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	849	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	814	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	794	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	809	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	798	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1,332	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	799	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1,669	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1,733	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1,624	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1,319	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1621	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1572	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1256	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1864	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1733	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	2083	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	900	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1135	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1477	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1719	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1746	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1613	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1464	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	0	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1716	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1820	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1607	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	873	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2019	335	1568	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy		2020	335	1328	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	921	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	806	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	1056	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	597	CHE Gasoline		
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	801	CHE Gasoline		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Dina		Gasoline	Chevy	454-FI	2011	335	970	CHE Gasoline		
Yard tractor	Kalmar		Diesel	Cummins	ISB240	2007	200	50	CHE On Road Diesel		
Yard tractor	Kalmar		Diesel	Cummins	ISB240	2007	200	175	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1867	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1903	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1783	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2518	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1403	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1386	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1415	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1234	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1691	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1690	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1798	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1830	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200		CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1770	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2224	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2067	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	69	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1604	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1615	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1685	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1386	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2305	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1699	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2373	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	1434	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2520	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB Tier 3	2007	200	2437	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1336	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1877	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1395	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1278	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1545	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1438	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1944	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2008	173	1716	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1698	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1519	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1843	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1466	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1912	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1830	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	2124	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1295	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1428	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1889	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	2418	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	853	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	2247	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB6.7	2007	173	1508	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6	2012	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6	2012	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1713	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2187	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1717	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1781	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2351	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1131	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1957	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2308	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2140	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2377	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1845	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1349	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2282	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1544	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	976	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2052	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2423	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2550	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1797	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1566	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1376	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1698	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1986	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1755	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2700	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2086	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1577	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1685	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2976	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2675	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2564	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2069	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2489	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	2105	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1174	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	707	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	991	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	94	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	1	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	8	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	162	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	7	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	5	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	16	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	3	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	6	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Ottawa	YT-50	Diesel	Cummins	ISB6-720	2014	250	0	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2272	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2686	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2570	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2313	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2760	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2376	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2439	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2510	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2964	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	1726	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2613	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2562	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2265	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2789	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	1762	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	3156	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2299	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2650	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	201	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2756	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	982	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2652	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2504	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2875	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2565	CHE On Road Diesel		
Yard tractor	Capacity	TJ7000	Diesel	Cummins	ISB 6.7	2007	240	2730	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2688	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2221	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	1974	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2566	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2097	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2380	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2591	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2007	240	2283	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	1224	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2873	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2602	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2548	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2516	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2348	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2738	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2619	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2751	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2855	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2280	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2851	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	3329	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2210	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2796	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2599	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2634	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2818	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	3159	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2408	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2441	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2554	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2102	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2796	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2541	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2860	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2885	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2814	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2798	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2567	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2718	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2833	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2505	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2819	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2967	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2614	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2770	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2982	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2029	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2724	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2347	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2373	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2869	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2476	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2434	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	132	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2917	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2580	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2622	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2337	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2360	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2754	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2354	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2424	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2008	240	2315	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2955	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2644	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2754	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2505	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2161	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2783	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2708	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2053	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2819	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2302	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	1621	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2291	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2952	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	3164	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2615	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2711	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2976	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	3065	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2849	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2676	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2320	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	0	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2245	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2011	240	2341	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2767	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2903	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2681	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2385	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2620	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2759	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2758	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3045	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2320	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2667	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2352	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2527	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3205	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2749	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2756	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3036	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2803	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2964	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2766	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2365	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2840	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2458	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2648	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2656	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2691	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2787	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2627	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2833	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2775	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3330	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2495	CHE On Road Diesel		

Port Equip Type	Equip Make	Equip Model	Engine Type	Engine Make	Engine Model	EngineYear	HP	Annual Hours	Category	DPF level 3	Blue Cat
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	957	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2765	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	1369	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2938	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	2730	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3168	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	3414	CHE On Road Diesel		
Yard tractor	Capacity	TJ9000	Diesel	Cummins	ISB 6.7	2012	240	86	CHE On Road Diesel		
Yard tractor	Kalmar		Diesel	Cummins	ISB6.7 200	2012	200	4742	CHE On Road Diesel		
Yard tractor	Ottawa	Commando	LPG	Ford V10		2009	173	18	CHE Propane		
Yard tractor	Ottawa	Commando	LPG	Ford V10		2009	173	40	CHE Propane		