PORT OF LOS ANGELES
EMISSIONS INVENTORY HIGHLIGHTS - 2013

THE PORT OF LOS ANGELES

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FOREWORD

This document provides an overview of the air quality improvement efforts associated with the Port of Los Angeles (POLA) in reaching its goals as presented in the San Pedro Bay Ports Clean Air Action Plan (CAAP). This Port of Los Angeles Emissions Inventory Highlights presents 2013 inventory findings, trends in emissions and cargo since 2005, emissions reduction measure progress, and upcoming highlights for 2013 and beyond. This document does not replace the detailed annual emissions reports; it draws information from these documents and reports progress in the context of the CAAP goals in a reader-friendly format.
(*portoflosangeles.org/environment/studies_reports.asp*)

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Photos by POLA; Illustrations by Rodolfo Montalvo

Even Cleaner Fuels Coming in 2014!

In 2014, cleaner ship fuels will arrive due to the final CARB fuel standard for all ships within 24 nautical miles of the California Coast and Leeward Islands and the continued implementation of the Environmental Ship Index (ESI) incentive program. The CARB standard reduces sulfur contents down 80% from 2013 requirements. POLA's ESI incentive program encourages ship operators to use fuels below regulated requirements.

INTRODUCTION

This document is the third edition of the Port of Los Angeles (POLA) Emissions Inventory Highlights Reader, which will be published in conjunction with the completion of the annual emissions inventories. This document tracks key elements from the inventories and other programs and compares them with the goals presented in the San Pedro Bay Ports Clean Air Action Plan (CAAP) and the 2010 CAAP Update. The CAAP focuses on emissions of diesel particulate matter (DPM), oxides of nitrogen (NOx), and sulfur oxides (SOx).

In March 2006, a groundbreaking meeting occurred at the highest level between POLA, POLB, and the South Coast Air Quality Management District where all parties expressed the need to work jointly toward solutions to reduce emissions from port-related operations. Shortly thereafter, the Ports also engaged the California Air Resources Board and the United States Environmental Protection Agency Region 9 in the spirit of cooperation to help the Ports develop the original 2006 San Pedro Bay Ports CAAP and subsequently the 2010 CAAP Update.

As part of the 2010 CAAP Update, both POLA and the Port of Long Beach (POLB) developed mass emissions and health-risk reduction standards in coordination with the United States Environmental Protection Agency (EPA) Region 9, the California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD). These emissions reduction standards set the bar for performance for port-related emission sources and represent the Ports' "fair share" in reducing emissions in the South Coast Air Basin (the Basin). The standards are compared to 2005 baseline levels.

THE PORT OF LOS ANGELES

The Port of Los Angeles is America's premier port and has a strong commitment to developing innovative strategic and sustainable operations that benefit the economy as well as the quality of life for the region and the nation it serves. As the leading seaport in North America in terms of shipping container volume and cargo value, the Port supports more than 919,000 regional jobs and $39.1 billion in annual wages and tax revenues. The Port of Los Angeles - A cleaner port. A brighter future.

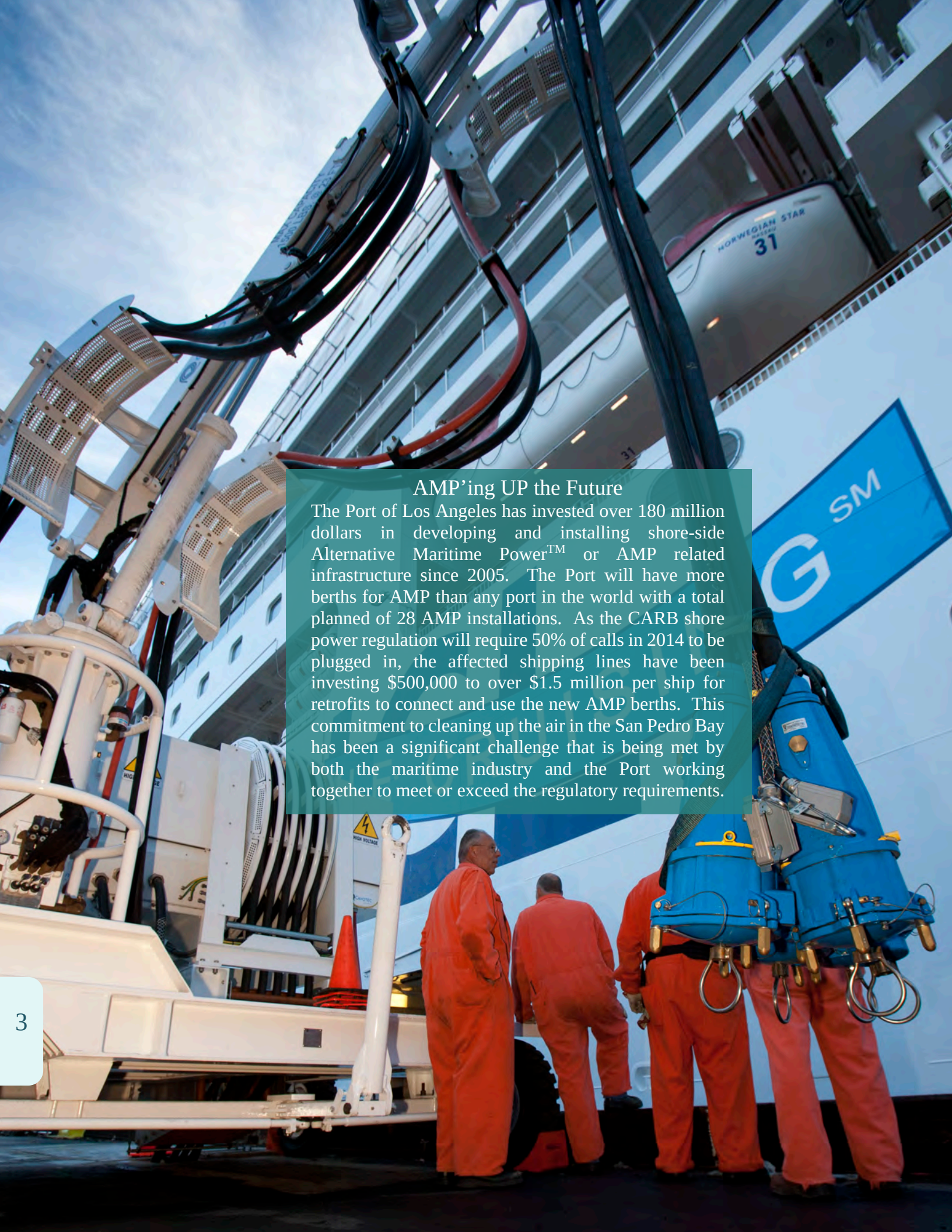
In addition, the CAAP sets out various measures for ocean-going vessels (OGV), harbor craft (HC), cargo handling equipment (CHE), locomotives, and heavy-duty vehicles (HDV). Additional initiatives, such as the Technology Advancement Program (TAP) and the zero emissions effort, support POLA's progress at attaining and maintaining the standards into the future.

The challenges of the CAAP are not only reaching the most aggressive reduction targets of any port, but maintaining the standards while the Port continues to grow. POLA is leading with solutions and investing today in technologies that will ensure that growth can be accomplished without significant impact on the surrounding communities and environment.

The **San Pedro Bay Standards** are a statement of the Ports' commitments to significantly reduce the air quality impacts from port operations. Achievement of the standards listed below will require coordination with our agency partners, diligent pursuit of all of the existing CAAP measures and aggressive action to seek out further emissions and health risk reductions from port-related sources from strategies that will emerge over time. The standards are relative to 2005 conditions.

Health Risk Reduction Standard - By 2020, reduce the population-weighted residential cancer risk of port-related DPM emissions by 85%.

Mass Emissions Reduction Standards -
By 2014, reduce emissions by 72% DPM, 22% NOx, and 93% SOx
By 2023, reduce emissions by 77% DPM, 59% NOx, and 93% SOx



AMP'ing UP the Future

The Port of Los Angeles has invested over 180 million dollars in developing and installing shore-side Alternative Maritime Power™ or AMP related infrastructure since 2005. The Port will have more berths for AMP than any port in the world with a total planned of 28 AMP installations. As the CARB shore power regulation will require 50% of calls in 2014 to be plugged in, the affected shipping lines have been investing $500,000 to over $1.5 million per ship for retrofits to connect and use the new AMP berths. This commitment to cleaning up the air in the San Pedro Bay has been a significant challenge that is being met by both the maritime industry and the Port working together to meet or exceed the regulatory requirements.

REPORT CARD

POLA developed a "Report Card" summary in 2009 which helps distill each current-year inventory and compare it to 2005, showing progress toward the CAAP goals. The report card has been effective in communicating a high level understanding of emissions reduction progress to date, describing Port efficiency measured in emissions per twenty-foot equivalent units (TEUs), and showing pollutant emissions for the five emission source categories. Additional relevant information is also provided each year on the report card.

The report cards are posted annually on the POLA website (*portoflosangeles.org /environment/studies_reports.asp*)

2005 - 2013 AIR QUALITY REPORT CARD

THE PORT OF LOS ANGELES

PRIMARY POLLUTANTS DEFINED

DPM = Diesel Particulate Matter
NOx = Oxides of Nitrogen
SOx = Oxides of Sulfur
$PM_{2.5}$ = Particulate Matter less than 2.5 microns in diameter
PM_{10} = Particulate Matter less than 10 microns in diameter
CO_2 = Carbon Dioxide (A Green House Gas contributor)

OVERALL EMISSIONS REDUCTIONS CY 2005-2013

Pollutant	CY 2005-2013 %	tons
DPM	80%	712
$PM_{2.5}$	79%	651
PM_{10}	80%	779
NOx	57%	9,311
SOx	90%	4,645

EMISSIONS PER 10,000 TEU HANDLED

Pollutant	CY 2005-2013 %	tons
DPM	81%	0.96
$PM_{2.5}$	79%	0.88
PM_{10}	81%	1.05
NOx	59%	12.90
SOx	90%	6.24

OCEAN-GOING VESSEL EMISSIONS REDUCTIONS

Pollutant	CY 2005-2013 %	tons
DPM	81%	386
$PM_{2.5}$	78%	353
PM_{10}	81%	456
NOx	34%	1,811
SOx	89%	4,496

HEAVY-DUTY VEHICLE/CLEAN TRUCK EMISSIONS REDUCTIONS

Pollutant	CY 2005-2013 %	tons
DPM	93%	229
$PM_{2.5}$	93%	209
PM_{10}	93%	227
NOx	80%	5,113
SOx	91%	38

HARBOR CRAFT EMISSIONS REDUCTIONS

Pollutant	CY 2005-2013 %	tons
DPM	52%	29
$PM_{2.5}$	52%	27
PM_{10}	52%	29
NOx	47%	615
SOx	91%	6

RAIL EMISSIONS REDUCTIONS

Pollutant	CY 2005-2013 %	tons
DPM	49%	28
$PM_{2.5}$	49%	26
PM_{10}	49%	28
NOx	52%	884
SOx	99%	97

CARGO-HANDLING EQUIPMENT EMISSIONS REDUCTIONS

Pollutant	CY 2005-2013 %	tons
DPM	76%	40
$PM_{2.5}$	73%	36
PM_{10}	73%	39
NOx	57%	888
SOx	84%	8

CO_2 EQUIVALENT REDUCTIONS BY SOURCE TYPE

Source Type	CY 2005-2013 %	metric tons
Ocean-Going Vessels	35%	103,603
Harbor Craft	16%	9,132
Cargo Handling Equipment*	-3%	-3,680
Rail	19%	15,403
Heavy-Duty Vehicles	25%	116,459
TOTAL		240,917

* All percentages reflect a reduction in emissions except cargo handling equipment.

SAN PEDRO BAY STANDARDS

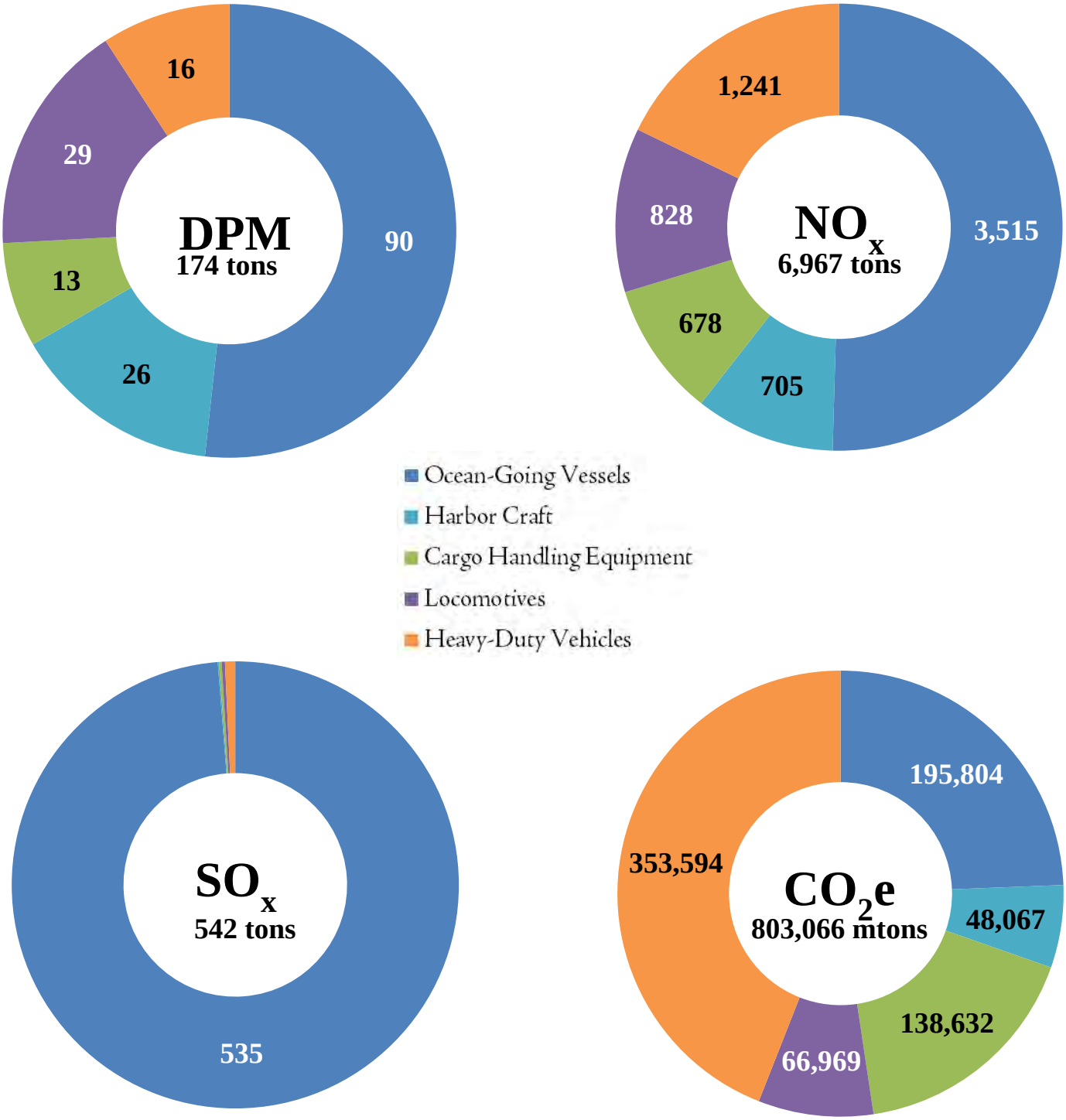
- The San Pedro Bay Standards establish the long-term emissions-reduction and health risk-reduction goals for the ports of Los Angeles and Long Beach.
- Emission Reduction Standard for DPM, NOx, and SOx have target years of 2014 and 2023 to support state ambient air quality goals.
- Health Risk Reduction Standard has a target year of 2020 to align with CARB's Goods Movement Emission Reduction Plan.

Clean Air Action Plan (CAAP) Goals (% reduction compared to 2005)	2014	2023
DPM	72%	77%
NOx	22%	59%
SOx	93%	93%

Health Risk Reduction Standard 2020 85%
(% reduction in residential cancer risk compared to 2005)

2013 EMISSIONS INVENTORY SUMMARY

The POLA emissions inventory and CAAP focus on emissions of DPM, NOx, and SOx as well as greenhouse gases. In addition, other pollutants are included in the more detailed technical reports (*portoflosangeles.org /environment/studies_reports.asp*). In 2013, the ocean-going vessel source category continues to be the significant driver of DPM, NOx, and SOx emissions. Greenhouse gases, expressed in carbon dioxide equivalents (CO_2e), were dominated by heavy-duty vehicles followed by ocean going vessels and cargo handling equipment. Total emissions for DPM, NOx, and SOx and emissions by source category, are presented in the following figures in tons. CO_2e is presented in metric tons (mtons).

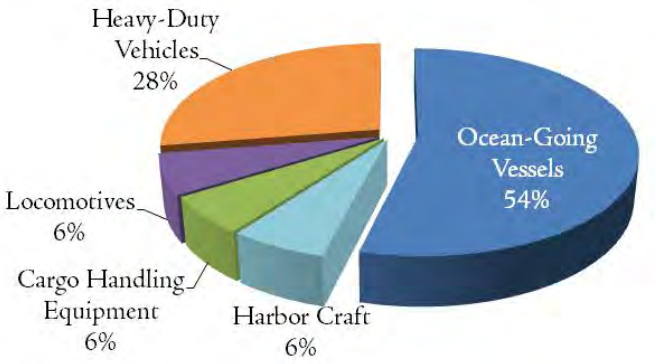


2005-2013 SOURCE CATEGORY CONTRIBUTION CHANGES

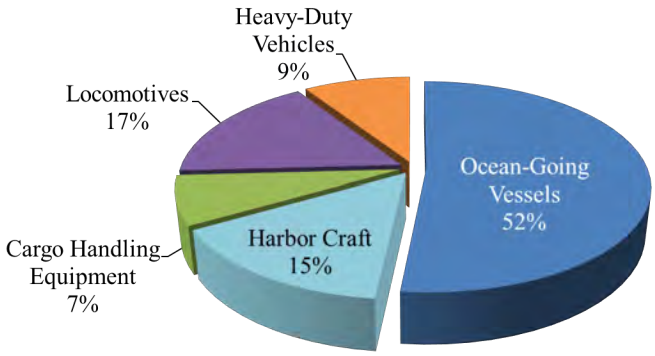
The contribution of each source category to total port-related emissions has changed since 2005 due to the implementation of the CAAP measures, various regulatory requirements that have come into effect for all source categories, and industry efforts to reduce emissions. The following figures illustrate the changes in port-related emissions contribution by source category between 2005 and 2013. Ocean-going vessels continue to make up over 99% of all port-related SOx emissions and therefore are not shown in the figures below.

DPM Emissions Contributions by Source Category

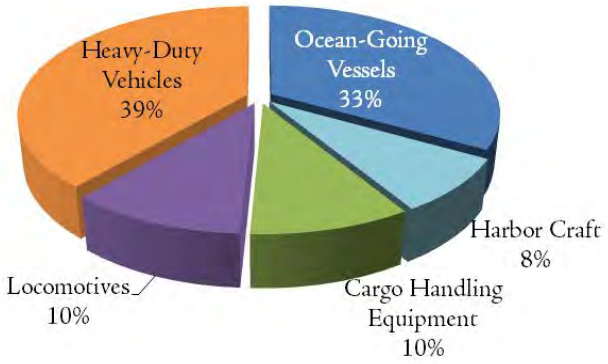
2005

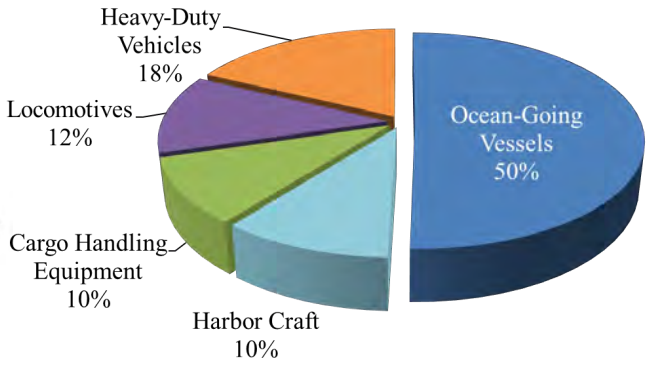


2013

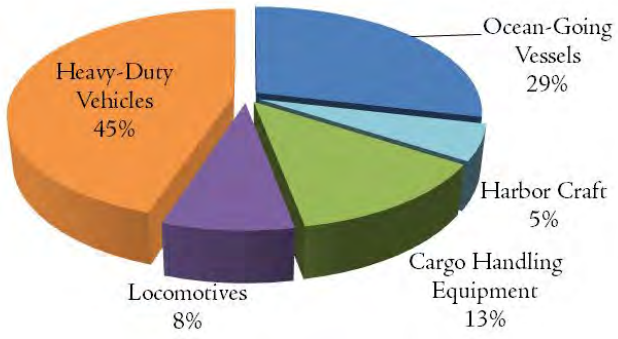


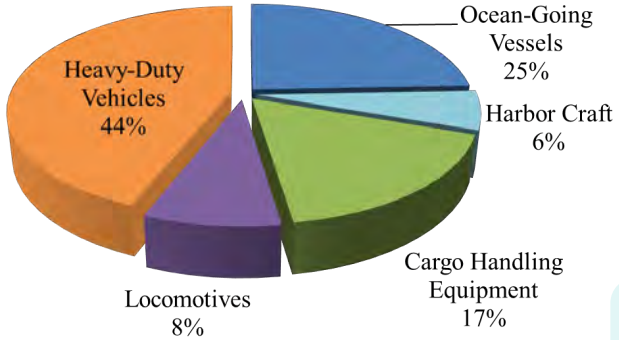
NOx Emissions Contributions by Source Category





CO_2e Emissions Contributions by Source Category

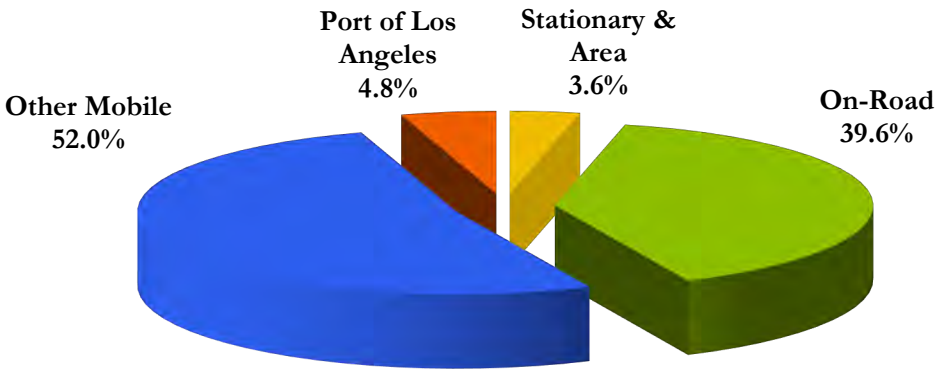




2013 REGIONAL EMISSIONS CONTRIBUTION

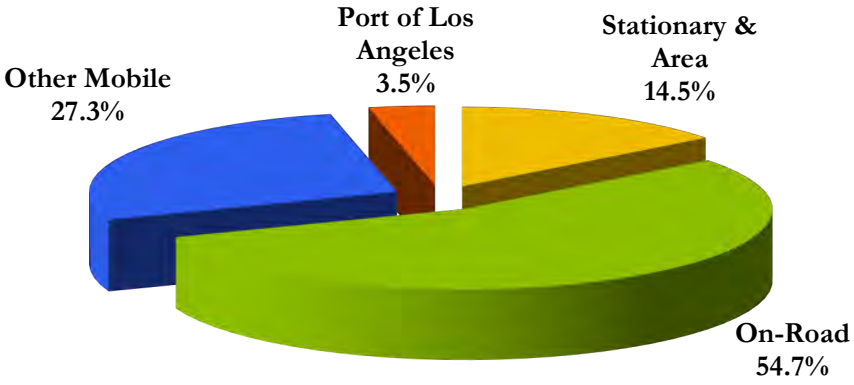
Illustrated below are the 2013 percent pollutant contributions of port-related emissions relative to the total South Coast Air Basin emissions.

DPM



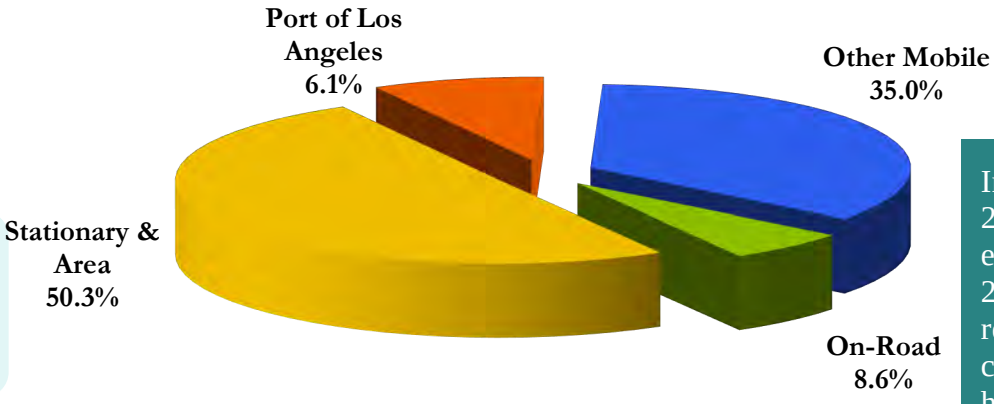
In 2005, port-related emissions contributed 8% of the total basin-wide DPM emissions and less than 5% contribution in 2013 while handling more container cargo than in 2005.

NOx



In 2005, port-related emissions contributed 4% of the total basin-wide NOx emissions and less than 4% contribution in 2013 while handling more container cargo than in 2005.

SOx



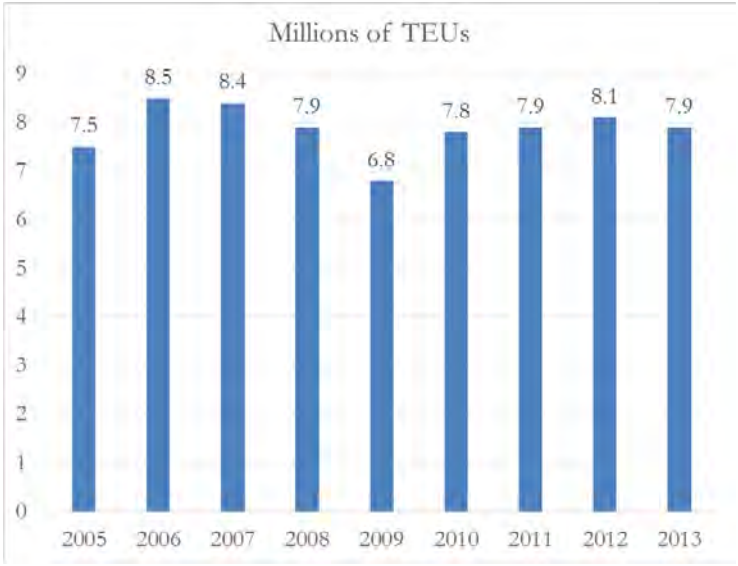
In 2005, port-related emissions were 24% of the total basin-wide SOx emissions and 6.1% contribution in 2013. This represents nearly a 75% reduction in basin-wide SOx contribution since 2005 while handling more container cargo.

2005-2013 ACTIVITY & CARGO GROWTH

Activity and cargo growth from 2005 to 2013 provide an overall context for the changes in emissions over time. The following figure presents the changes in cargo-related activity from 2005 to 2013 in millions of containers (measured in twenty foot equivalent units or TEUs) annually. As can be seen in the trends figure, cargo peaked in 2006 and then dropped off significantly in the 2008-2009 period. From 2010 to 2013 TEUs have recovered above 2005 levels.

Over the same period of time, vessel call distributions changed showing a shifting of the deployed fleet over time. Events relating to the financial crisis that began in late 2007 have resulted in significant changes to the fleets calling POLA, as shipping lines adjust their fleets in response to the changes in cargo volumes and box rates. Container ship call data shows definite size-related trends as the fleet transitions; generally the changes have had a positive effect on ship-related emissions.

Containerized Cargo Volume

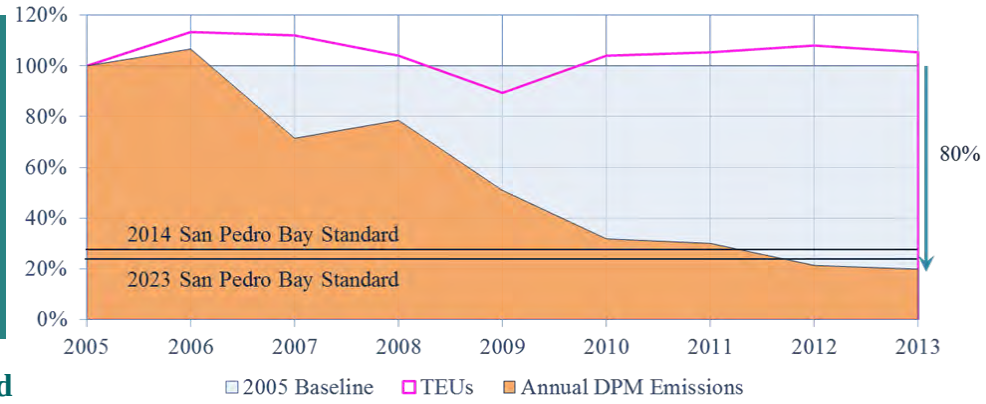


2005-2013 PORT-RELATED EMISSIONS TRENDS

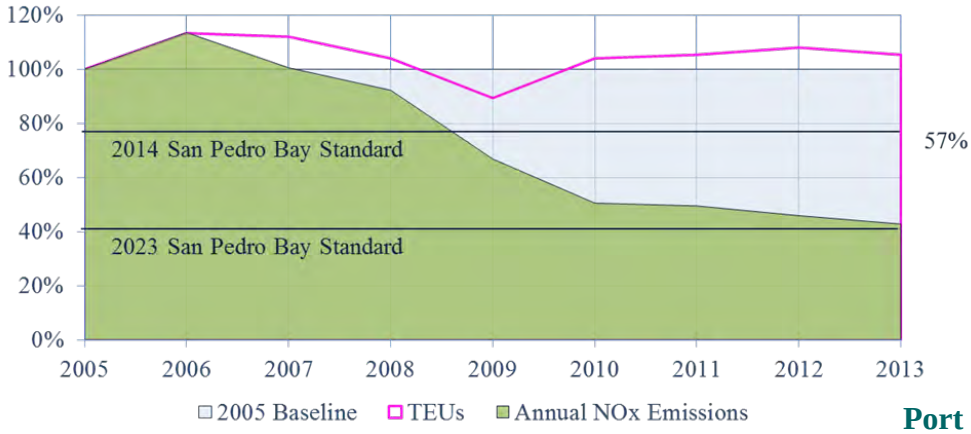
Cargo activities and emissions have diverged paths since 2006 with emissions reductions far exceeding changes in cargo volumes. This separation occurred due to the implementation of the CAAP and various CARB/EPA regulations. The figures below show the port-related trends for DPM, NOx, SOx, and CO_2e.

Port DPM Emissions Trend

Port-related DPM emissions have decreased 80% since 2005. These reductions were led by vessel speed reduction, cleaner vessel fuels, AMP, and the Clean Truck Program, which all contributed to significant reductions in DPM emissions through 2013.



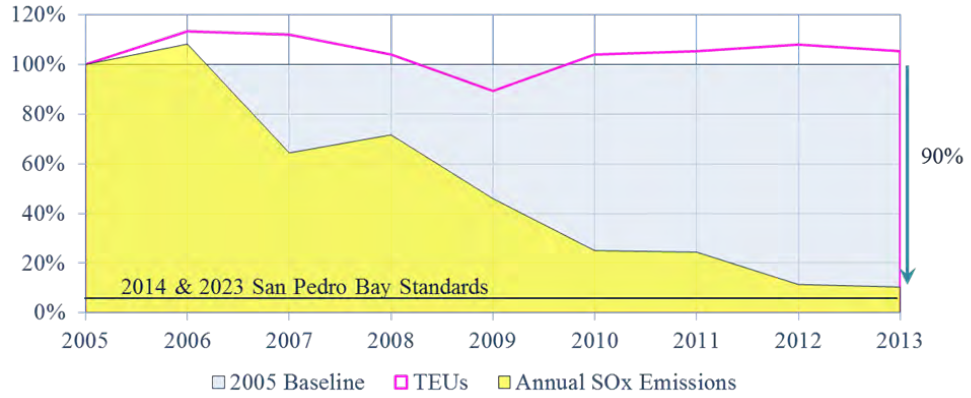
Port NOx Emissions Trend



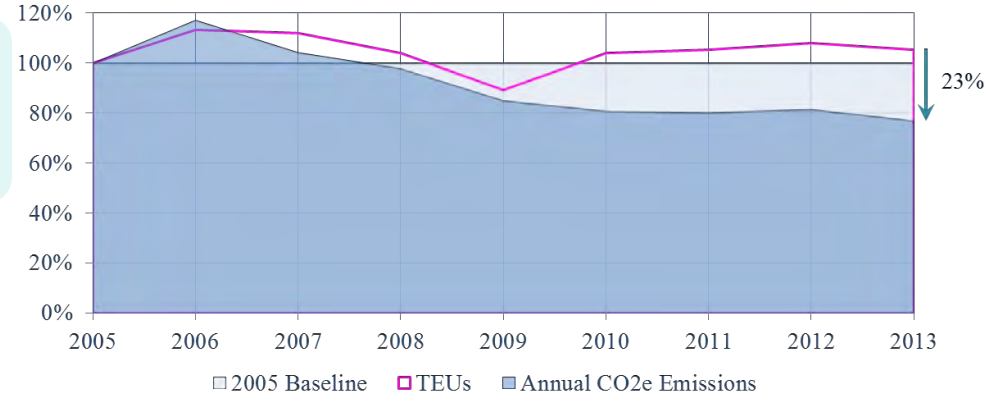
Port-related NOx emissions have decreased 57% since 2005. These reductions were led by vessel speed reduction, the Clean Truck Program, CARB cargo handling equipment-related regulations, AMP, and rail fleet modernization.

Port SOx Emissions Trend

Port-related SOx emissions have decreased 90% since 2005. These reductions were led by CARB vessel fuel switching regulation, Environmental Ship Index, as well as ultra low sulfur diesel for use by on-road and off-road vehicles, vessel speed reduction, and AMP.



Port CO_2e Emissions Trend



Since 2005, port-related greenhouse gas emissions have also been reduced by 23% as a result of "co-benefits" from the implementation of CAAP measures, such as vessel speed reduction, efficiency improvements, and AMP. Further reductions came from the maritime industries improvements in operational efficiencies.

2005-2013 PORT-RELATED EFFICIENCY TRENDS

Port-related efficiency improvements track well with total port-related emissions trends. The following illustrates the efficiency improvements on per 10,000 twenty-foot equivalent units (TEUs) basis. This is an important metric to normalize emissions reductions and accurately present real progress in light of fluctuating cargo volume.

Port-wide DPM efficiencies have continued to improve since 2005 with an 81% reduction from 1.18 to 0.22 tons per 10,000 TEUs.

Port-wide NOx efficiencies have continued to improve since 2005 with a 59% reduction from 21.75 to 8.85 tons per 10,000 TEUs.

Port-wide SOx efficiencies have continued to improve since 2005 with a 90% reduction from 6.93 to 0.69 tons per 10,000 TEUs.

Port-wide CO_2e efficiencies have continued to improve since 2005 with a 27% reduction from 1,395 to 1,020 tons per 10,000 TEUs.

How do we get from here to there?

With the demand for electricity expected to increase dramatically in coming years, the Port is developing the Energy Management Action Plan or E-MAP as a guide to improve the Port's energy profile into the future. Driving the increased demand is the expanded use of shore power; electric cranes, yard tractors and other cargo handling equipment; and future electrification, which all have air quality co-benefits. E-MAP elements will include assessing the Port's existing and future power demands and developing a contingency plan for resuming operations in the event of an unexpected loss in power.
(portoflosangeles.org/DOC/DRAFT%20POLA%20E-MAP_July%202014.pdf)

SOURCE CATEGORY HIGHLIGHTS

Ocean-going vessels

Emissions comparisons 2005-2013.

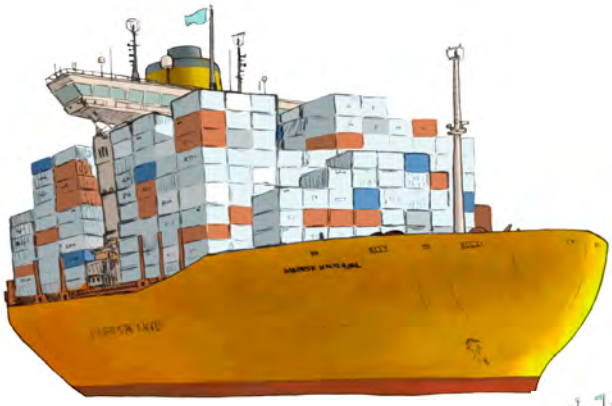
DPM Emission by Year

2005 476 tons

2013 90 tons

Ocean-going vessel DPM emissions are 81% lower, NOx emissions are 34% lower, and SOx emissions are 89% lower than in 2005, even with 5% more container throughput. These reductions are slightly less than reported in 2012 because the benefit from slide valves was removed due to test results. Improved reduction values will be reinstated in the 2014 inventory. .

SOx Emission by Year



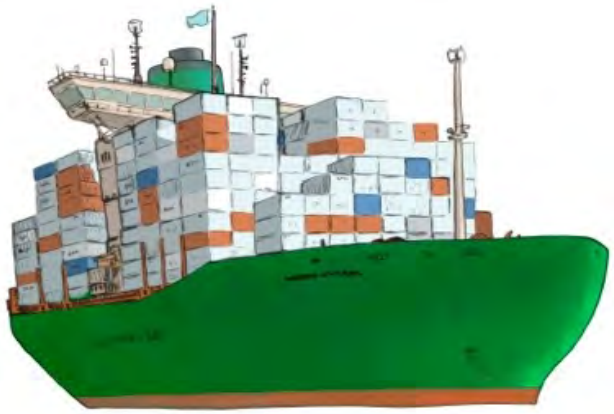
2005 5,031 tons

2013 535 tons

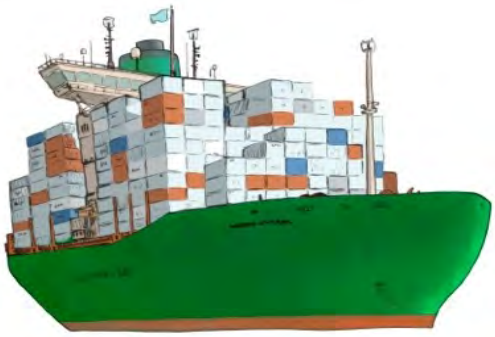
Ship-related emissions continue to show reductions in 2013 due to successful implementation of CAAP measures, Environmental Ship Index incentives, fuel-based regulations, and AMP. Highlights include:

- Continued high compliance rates with the voluntary vessel speed reduction (VSR) program
  - 97% compliance 20 nautical miles (nm)
  - 83% compliance 20-40 nm
- Increasing use of AMP while at berth

NOx Emission by Year



2005 5,326 tons



2013 3,515 tons

Utilizing AMP for one container or cruise ship call reduces ~1 ton of NOx generated onboard the ship. City of Los Angeles' Department of Water & Power generates the same energy at 96% less NOx emissions. The resulting NOx reduction per call is the equivalent of taking 295 cars off the road for a year.

Starting in 2014, CARB's shore-power regulation will require container, reefer, and cruise lines that have more than 25 fleet calls to utilize AMP for 50% of their calls. The regulation increases to 70% in 2017 and 80% in 2020. Further reductions from AMP will increase in upcoming emissions inventories.

SOURCE CATEGORY HIGHLIGHTS

Trucks

DPM Emissions Comparison

2005 245 tons

2013 16 tons

NOx Emissions Comparison

2005 6,354 tons

2013 1,241 tons

SOx Emissions Comparison

2005 42 tons

2013 4 tons

The development and implementation of the Clean Truck Program (CTP) continues to be a true success story of the CAAP. The first program of its kind for port-related trucks, it continues to accelerate the benefits from EPA cleaner engine standards by banning older model year trucks from access to port facilities. The illustrations on the left compare DPM, NOx, and SOx emissions in 2005 to 2013. The CARB ULSD rule came into effect in June 2006 which dramatically reduced truck-related SOx emissions.

As part of the CTP implementation, the following three incremental truck model year bans at port facilities have been implemented:

- Ban #1 - October 1, 2008: All pre-1989 trucks were banned
- Ban #2 - January 1, 2010: All 1989-1993 trucks were banned in addition to 1994-2003 trucks that had not been retrofitted
- Ban #3 - January 1, 2012: All trucks not meeting 2007 EPA clean truck standards were banned.

The 2012 Ban is in full effect and has resulted in additional reductions in DPM and NOx and 21% of trucks calling port terminals were 2010 or newer, which are even cleaner than the truck Ban #3 requirements. Truck emissions reductions assist in reaching and maintaining CAAP mass emissions reduction standards and also have a significant effect on reaching the CAAP health-risk reduction standard as trucks operate in close proximity to surrounding communities.

The CTP has been so successful that ports along the West, Gulf, and East coasts are implementing similar versions of the program. Overseas ports are also looking at the CTP as a measure they can employ to reduce port-related emissions.

In 2005, over 99% of the trucks servicing POLA terminals were older than 2004 and 50% of those were older than 1994. In 2013, 79% were 2007-2009 and 21% were 2010 or newer trucks.

SOURCE CATEGORY HIGHLIGHTS

Rail

There are two types of railroad services associated with port-related cargo movements: switching and line haul. Switching services are related to the building and organizing of unit trains, railcar pickup and delivery to the various terminals, and related yard work. Class 1 line haul services are related to the interstate movement of trains for nationwide cargo distribution. The illustrations below show how DPM, NOx, and SOx emissions have changed since 2005 for all port-related locomotive emissions.

The Pacific Harbor Line, Inc. (PHL) is the primary company providing switching services at POLA. PHL currently operates 23 locomotives in and around the port areas. In 2005, the PHL switching fleet consisted of locomotives built from the 1950s to the 1970s, which is typical for the industry. Over the past several years, with assistance from POLA, POLB, AQMD, and CARB - PHL has replaced all of their aging locomotives with a modern fleet of advanced low-emissions locomotives using Tier 3 or better engines; the full benefits from this latest advancement were seen in 2013.

As of 2013, SOx emissions have been virtually eliminated from locomotives.

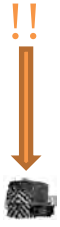
DPM Emissions Comparison

2005 57 tons

2013 29 tons

SOx Emissions Comparison

2005 98 tons



2013 1 ton

NOx Emissions Comparison

2005 1,712 tons

2013 828 tons

Since 2005, SOx emissions from locomotives has been nearly eliminated (reduced by 99%) through federal and state rules requiring ultra low sulfur or ULSD fuels, which are capped at less than 10 parts per million sulfur.


S.W.L.
40LT UNDER SPREADER
50LT UNDER CARGO BEAM
TraPac
PACECO-MITSUI PORTAINER
S.W.L.
WBCT
WBCT
WBCT
7
8

SOURCE CATEGORY HIGHLIGHTS

Cargo Handling Equipment

Efforts to reduce emissions associated with cargo handling equipment (CHE) were among the earliest emissions reduction control measures implemented at POLA, including several that predate the CAAP. DPM and NOx emissions have been reduced through a combination of regulations, emissions reduction projects/grants, installation of emissions control devices, and the use of on-road engines in CHE. SOx emissions have been significantly reduced through the CARB ULSD mandate in 2006. The illustrations present the relative change in CHE emissions from 2005 versus 2013.

Cargo handling equipment emissions were significantly reduced since 2005. The combination of terminal efficiency improvements, cleaner engine standards, grant project funding, and efforts by terminal operators to reduce fuel consumption and emissions are the reasons for the reductions in annual emissions.

- DPM has been reduced 76% since 2005
- NOx has been reduced 57% since 2005
- SOx has been reduced 84% since 2005

In 2013, less than 10% of all CHE engines were Tier 1 or older. That means that over 90% were Tier 2 or cleaner. The remaining 90% of the CHE fleet had the following engine types: 20% Tier 2, 11% Tier 3, 9% Tier 4i, and nearly 50% were powered by cleaner on-road engines.

Harbor Craft

Most of the emissions reductions associated with harbor craft have been achieved through grant funding by POLA through AQMIP and AQMD/CARB programs for replacing older vessel engines with newer, cleaner engines. These efforts continue to reduce DPM and NOx annual emissions. SOx was reduced in 2006 by CARB's ULSD fuel rule which significantly reduced the harbor craft contribution to total port-related sulfur emissions.

CHE Emissions 2005-2013

DPM

2005 53 tons

2013 13 tons

NOx

2005 1,566 tons

2013 678 tons

SOx

2005 9 tons

2013 2 tons

Harbor craft emissions have decreased significantly since 2005. A combination of engine repowers, CARB regulations, and innovative solutions from vessel owners/operators are responsible for the reductions in annual emissions.

- DPM has been reduced 52% since 2005
- NOx has been reduced 47% since 2005
- SOx has been reduced 91% since 2005

In 2005, 48% of the harbor craft fleet engines were Tier 1 or older, 2% were Tier 2, and no Tier 3 engines. In 2013, only 21% were Tier 1 or older, 36% Tier 2, and 13% Tier 3. For the remaining engines for both years the tier level could be identified, however the unknowns reduced from 49% to 29% since 2005.

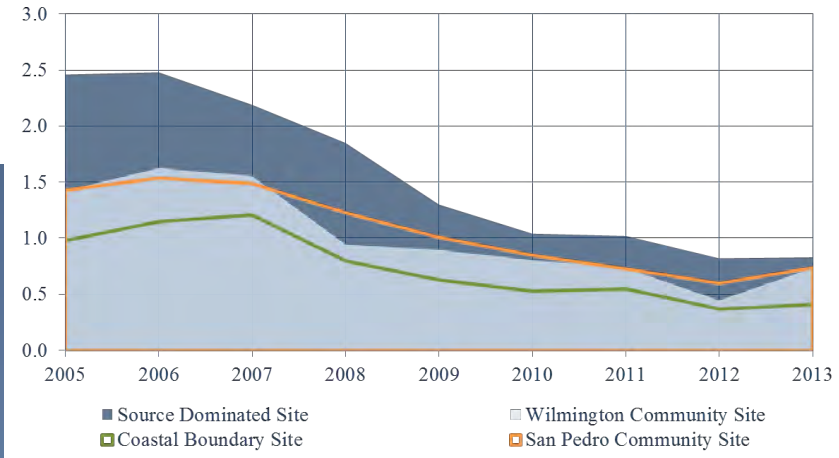
AIR MONITORING HIGHLIGHTS

Air Quality Monitoring Trends

In addition to developing and publishing the annual emissions inventory as a means of tracking progress, the Port operates four air monitoring stations at locations around POLA. Elemental carbon is monitored as a surrogate for diesel-related emissions. The figure shows how the measured annual average elemental carbon concentrations have been reduced by 48-67%, which trends similarly with the DPM emissions inventory numbers over the same period.

Air monitoring provides for another "real world" metric in addition to the inventories to measure the Port's progress in reducing its mass emissions and health-risk related impacts.

2005-2013 Annual Average Elemental Carbon Concentrations (µg/m^3)



POLA has four monitoring stations that started to collect elemental carbon data in 2005. These stations consist of the coastal boundary station (typically representing background levels), the Wilmington and San Pedro community sites, and a source dominated site on Terminal Island – in the middle of port-related operations. *(caap.airsis.com/Default.aspx)*

LOOKING AHEAD

2013 & Beyond

With eyes on the future, looking for innovative methods to sustaining emissions reductions while accommodating growth, POLA continues to look for emissions reduction and efficiency opportunities. Through the Technology Advancement Program or TAP, POLA is evaluating tomorrow's technologies today (*cleanairactionplan.org/programs/tap/default.asp*).

In 2011, both San Pedro Bay ports introduced their Zero-Emissions Technology Roadmap, which is targeted at meeting the challenges of sustained green growth. In 2013, the port started work on its Energy Management Action Plan or EMAP to improve energy efficiency at the port.

In 2014, POLA will continue to focus on reducing ship-related emissions through continuation of the Vessel Speed Reduction program, expansion of AMP calls due the 50% requirement of the CARB shore power regulation. The increase in the use of AMP will reduce ship hotelling emissions across all pollutants.

In addition to the above, the CARB fuel switch rule will move to its highest requirement in that all vessels that operate within 24 nautical miles of the California Coast and Leeward Islands will have to operate on 0.1% sulfur distillate fuels, compared to the 0.5% sulfur requirement in 2013.

Emissions reductions will be continued through the ongoing implementation of the Environmental Ship Index (ESI) incentive program to reward and recognize the top performing cleanest vessels.

ESI is an international indexing system for clean ships and was developed under the International Association of Ports & Harbors, World Ports Climate Initiative. POLA was the first Pacific Rim and Western Hemisphere port to join the index. (*esi.wpci.nl/Public/Home*)

POLA is a founding member of the World Port Climate Initiative (WPCI) of the International Association of Ports and Harbors (IAPH). Approximately 60 of the world's key ports, acknowledging their unique capacity as key hubs in global supply chains, have come together in a commitment to reduce their greenhouse gas emissions while continuing their role as transportation and economic centers. POLA hosted the formation of the WPCI in November 2008 and has been the lead port for the IAPH Tool Box and Carbon Footprinting working groups. In 2013, POLA implemented the WPCI ESI as it looks to continue to reduce emissions from ships. At the beginning of 2013, there were over 2,300 participating ships in the ESI database.
(*wpci.iaphworldports.org/index.html)*

Further advancement in clean technologies and deployment of cleaner equipment is anticipated in 2014. There should be an increasing number of 2010 or newer trucks into the fleet serving POLA, the full benefits of the third CTP truck ban, an increase in the use of alternative fuels, and further development and deployment of electric trucks and cargo handling equipment.

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For more information & the detailed technical report.
(portoflosangeles.org/environment/studies_reports.asp)