

Ports

Background

The Ports of Los Angeles and Long Beach (Ports) combined are the busiest ports in the United States and the ninth busiest port complex in the world. Almost forty percent of containers imported to the United States pass through the Ports. As a result, the Ports are important to the local and regional economy and support hundreds of thousands of jobs.

Cargo is delivered to and from the Ports by ships, trucks, and trains. In 2018 the Ports handled 48,000 containers (i.e., twenty-foot container units) of goods per day (or 17.5 million containers per year). Containerized volume of goods has grown by almost 11% between 2012 and 2016. The overall volume of cargo activity at the Ports is expected to increase more than 200 percent by 2035.

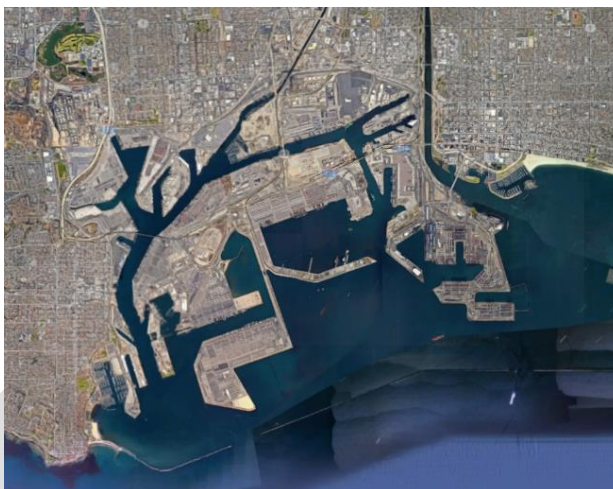


Figure 5-1. Ports of Los Angeles and Long Beach

Community Air Quality Priorities – Zero- and Near-zero Technology, Oil Tanker Leaks, and Targeted Enforcement

The Wilmington, Carson, West Long Beach community identified the Ports as an air quality priority. Sources of air pollution at the Ports include, ocean-going vessels, commercial harbor craft (e.g. ferries, tugboats, fishing boats) cargo handling equipment (e.g. yard trucks, forklifts, reach stackers), drayage trucks, and other equipment. To reduce emissions from these sources the CSC recommended:

- Implementation of zero- (preferred when available) and near-zero emission technologies through incentive opportunities and regulation,
- Targeted or enhanced enforcement of existing CARB regulations (e.g. Drayage Truck and Ocean-Going Vessels Fuel Regulation), and
- Detection of leaks from oil tankers at-berth.

Ongoing Efforts

Annual Emissions Reporting

The Ports develop an annual emissions inventory for each respective port. These emissions inventories serve as the primary tool to track the Ports' efforts to reduce emissions through the implementation of state, federal, and international regulations and measures in the Ports Clean Air Action Plan. The emissions inventories cover port-related mobile sources including ocean-

going vessels, cargo handling equipment, commercial harbor craft, heavy-duty trucks, and rail locomotives. The Port of Los Angeles has conducted a port annual emissions inventory since 2005 starting with a 2001 baseline.¹ The Port of Long Beach has also conducted an annual emissions inventory since 2005 and also did a special baseline report for 2002.²

CARB's Drayage Truck Regulation³

This regulation reduces air toxics and criteria pollutant emissions from drayage trucks. A drayage



truck is defined as any in-use on-road vehicle with a gross vehicle weight rating of greater than 26,000 pounds that is used for transporting cargo to and from ports and intermodal rail yards. The regulation requires all drayage trucks to operate with an engine that is a 2007 model year or newer. Drayage trucks must also meet the requirements of the CARB Truck and Bus Regulation, which requires that all drayage trucks must have 2010 model year or newer engines by January 1, 2023.

CARB's Mobile Cargo Handling Equipment (CHE) Regulation⁴

The Mobile Cargo Handling Equipment Regulation was developed to reduce diesel particulate matter (PM) and nitrogen oxides (NOx) emissions from diesel-fueled mobile CHE at California's ports and intermodal rail yards. This equipment can be used to lift or move containers, bulk or liquid cargo, or to perform routine or predictable maintenance and repair activities. CHE includes equipment such as yard trucks, top handlers, side handlers, reach stackers, forklifts, rubber-tired gantry cranes, aerial lifts, and other types of equipment used in maintenance operations. The existing CHE regulation, which was fully implemented in December 2017, required cleaner diesel equipment for existing fleets of equipment.

In March 2018, CARB presented a plan to begin developing a new regulation to minimize emissions and further reduce community health impacts from CHE. CARB is assessing the availability and performance of zero-emission technologies. The new regulation is expected to be considered for adoption in 2022. These regulatory updates would potentially take effect in 2026. CARB would prioritize the earliest implementation in or adjacent to the communities most impacted by air pollution.

¹ Port of Los Angeles, Annual Inventory of Air Emissions, <https://www.portoflosangeles.org/environment/air-quality/air-emissions-inventory>, Accessed June 1, 2019.

² Port of Long Beach, Emissions Inventory Documents, <http://www.polb.com/environment/air/emissions.asp>, Accessed June 1, 2019.

³ California Air Resource Board, ARB's Drayage Truck Regulatory Activities, July 2018, www.arb.ca.gov/drayagetruck, Accessed May 23, 2019.

⁴ California Air Resource Board, Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, August 2011, www.arb.ca.gov/regact/2011/cargo11/cargoisor.pdf, Accessed May 23, 2019.



Figure 5-3. Mobile Cargo Handling Equipment

CARB's Commercial Harbor Craft Regulation⁵

The Commercial Harbor Craft Regulation reduces NOx and PM emissions from diesel engines on commercial harbor craft vessels. The regulation applies to all commercial harbor craft vessels including, but not limited to, ferries, excursion vessels, tugboats (including ocean-going tugs), towboats, push boats, crew and supply vessels, barge and dredge vessels, work boats, pilot vessels, and commercial and charter fishing boats. The existing regulation requires certain existing commercial harbor craft to meet specific engine standards established by U.S. EPA (e.g., Tier 2 or Tier 3 standard) for main and auxiliary engines. A number of harbor craft operating at the ports have been voluntarily repowered with cleaner engines through incentive funding programs designed to reduce emissions (e.g. Carl Moyer program⁶).



CARB's At-Berth (Shorepower) Regulation⁷

The At-Berth (Shore Power) Regulation reduces PM and NOx emissions from auxiliary engines on ocean-going vessels while at-berth at California ports. Fleets affected by the regulation include those composed of container vessels, passenger vessels, or refrigerated cargo vessels. The At-Berth Regulation phased in over time and fleets were required to meet 50% reductions in 2014, and 70% reductions in 2017. By January 1, 2020, more stringent requirements will be in effect, reaching 80% reductions.

Fleets at-berth must limit or reduce emissions with one of two options: the Reduced Onboard Power Generation Option (relies on the use of shore-based electrical power), or the alternative

⁵ California Air Resource Board, Commercial Harbor Craft, 2019, www.arb.ca.gov/ports/marinevess/harborcraft.htm, Accessed May 23, 2019.

⁶ Carl Moyer Program (Heavy-Duty Engines), <http://www.aqmd.gov/home/programs/business/business-detail?title=heavy-duty-engines&parent=vehicle-engine-upgrades>, Accessed June 7, 2019.

⁷ California Air Resource Board, Shore Power for Ocean-going Vessels, May 2019 www.arb.ca.gov/ports/shorepower/shorepower.htm, Accessed May 23, 2019.

Equivalent Emissions Reduction Option. Under the Reduced Onboard Power Generation Option, fleets must reduce their total auxiliary engine power at-berth by 80% with shore power, while also using shore power on at least 80% of their vessel calls. Under the Equivalent Emission Reduction Option, fleets must reduce their total NO_x and PM emissions at-berth by 80% with shore power or another approved alternative technology. These control measures include the use of one or more emission control techniques, such as grid-based shore power, natural gas-fueled engines, emission controls installed on the vessels (e.g. particulate control traps, selective catalytic reduction units, alternative fuels, etc.), or emission controls installed at the wharf (e.g. a bonnet emission capture and treatment system).

CARB staff is currently developing a replacement regulation for Ships At Berth that would require more stringent compliance rates for regulated vessels and the addition of other vessel types.

CARB's Ocean-Going Vessels - Fuel Rule

Ocean-Going Vessels - Fuel Rule⁸ requires the use of low sulfur marine distillate fuels in order to reduce PM, diesel PM, NO_x, and SO_x from ocean-going vessels within 24 nautical miles of California coast. The sulfur content limits for marine fuels used in ocean-going vessel main (propulsion) diesel engines, auxiliary diesel engines, and auxiliary boilers were phased in from 2009 to the current limit of 0.1% sulfur which went into effect in January 2014.

San Pedro Bay Ports Clean Air Action Plan (CAAP)⁹ - Port of Long Beach and Port of Los Angeles

Since the adoption of the original CAAP in 2006, the CAAP strategies in conjunction with state, federal and international regulations have reduced PM, NO_x, and SO_x emissions from the Ports. The recently updated 2017 CAAP provides new strategies to further reduce pollution from sources operating in and around the Ports (e.g., ships, trucks, trains, harbor craft, and cargo-handling equipment). Ships are the largest source of NO_x emissions at the Ports. To address ship emissions, the ports provide financial incentives for ships with the cleanest engines or ships equipped with emission-reducing technologies. The Port of Los Angeles also provides funding for ships participating in a technology demonstration program. In addition, the ports implement the Vessel Speed Reduction (VSR) Program¹⁰ by providing financial incentives for ships to reduce speeds within 40 nautical miles of Point Fermin which results in less emissions from the main engines.

The 2017 CAAP includes a Clean Trucks Program. Under this program, beginning in 2020, all heavy-duty trucks will be charged a rate to enter the ports' terminals, with exemptions for trucks that are certified to meet or exceed the near-zero standard. By 2035 only trucks that are certified

⁸ California Air Resource Board, Ocean-Going Vessels - Fuel Rule, August 2017, <https://www.arb.ca.gov/ports/marinevess/ogv.htm>, Accessed May 23, 2019.

⁹ San Pedro Bay Ports, Clean Air Action Plan, <http://www.cleanairactionplan.org/>, Accessed June 1, 2019.

¹⁰ The Port of Los Angeles, Vessel Speed Reduction Program, <https://www.portoflosangeles.org/environment/air-quality/vessel-speed-reduction-program>, June 1, 2019.

to meet zero-emissions will be exempt from the rate. The ports will also work with terminal operators through the terminals’ procurement planning process to promote and require the use of near-zero and zero-emission terminal equipment. CARB will also be considering a Zero Emissions Drayage Truck Rule¹¹ in 2022. The implementation of this rule will likely begin in 2026 or later.

Opportunities for Action

In addition to the ongoing efforts described in this chapter, the CSC identified specific actions to address community priorities related to addressing the committee’s concerns around emissions from sources at the ports. The actions are described below.

Action 1: Reduce Leaks from Oil Tankers	
Course of Action:	
<ul style="list-style-type: none"> • Use optical gas imaging technology, air monitoring, and other available emissions information to identify potential fugitive emission leaks from oil tankers and conduct targeted enforcement of Rule 1142 – Marine Tank Vessel Operations • Evaluate opportunity to amend South Coast AQMD Rule 1142 to require marine vessels to calibrate and maintain pressure relief devices and require recordkeeping, with the goal of minimizing fugitive emission leaks 	
Strategy:	
<ul style="list-style-type: none"> • Monitoring • Enforcement • Collaboration 	
Goal(s):	
<ul style="list-style-type: none"> • Evaluate monitoring data on a regular basis to identify potential leaking vessels • Provide quarterly or biannual updates to the CSC on South Coast AQMD enforcement activities regarding fugitive emission leaks from oil tankers • Collaborate with CARB and United States Coast Gaurd to evaluate pressure relief valve calibration and maintenance methods, and effectiveness in preventing fugitive emission leaks 	
Estimated Timeline:	
<ul style="list-style-type: none"> • Beginning mid-2020, provide the CSC with quarterly updates on surveillance monitoring activities for oil tanker leaks • Beginning 2020, commence evaluation of pressure relief valve calibration and maintenance methods for possible rule amendment 	
Implementing Agency, Organization, Business or Other Entity:	
Name:	Responsibility:

¹¹ California Air Resource Board, Assessment of a Zero Emission Vehicle Requirement for Light and Heavy Duty Vehicle Fleets, August 2018, https://www.arb.ca.gov/msprog/zev_fleet_workshop_presentation_083018.pdf, June 1, 2019.

South Coast AQMD	Use optical gas imaging technology to identify oil tankers with fugitive leaks; board marine vessels to evaluate potential violations with Rule 1142, and assess potential Rule 1142 amendment
CARB	Conduct enhanced inspections to ensure compliance with CARB's regulations
Ports (Los Angeles and Long Beach)	Work with South Coast AQMD and CARB to grant access for inspections
References:	
Details about the requirements for Rule 1142 (Marine Tank Vessel Operations) are available at: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1142.pdf	

Action 2: Reduce Emissions from Ships and Harbor Craft

Course of Action:

- Conduct outreach activities to shipping lines and harbor craft owners to provide information about existing and new incentive programs for cleaner technologies for ships and harbor craft
- Identify additional incentive funding opportunities to accelerate adoption of cleaner technologies for ships and harbor craft
- Conduct demonstration projects for retrofit technologies for ships and harbor craft for developing new incentive programs
- Support CARB's rule development for the proposed At-Berth Regulation and future updates to Commercial Harbor Craft Regulation

Strategy:

- Incentives
- Public information and outreach
- Regulation

Goal(s):

- Conduct *[fill in number]* of outreach events over the next *[fill in number]* years in the ports area to provide information about incentives
- Complete technology demonstration for retrofitting ships (ocean-going vessels, OGVs)
- Work with authorities in Asia to collaborate on a Pacific Rim clean vessel incentive program
- Participate in CARB rule development

Estimated Timeline:

- Begin outreach for a Pacific Rim clean vessel incentive program 2019
- CARB's At-Berth Regulation: December 2019

<ul style="list-style-type: none"> • Begin conducting incentive outreach events before 2020, when incentive programs are open for applications • Sign agreement for joint clean vessel incentive program with Asian ports by 2020 • CARB's Commercial Harbor Craft Regulation: 2020 	
Implementing Agency, Organization, Business or Other Entity:	
Name:	Responsibility:
South Coast AQMD	Provide incentives for cleaner ships and harbor craft through the Carl Moyer Program and AB 617-related incentive funds; Identify additional incentive funding opportunities; conduct technology demonstration projects
Pacific Rim authorities and ports	Partner with South Coast AQMD to incentivize cleaner ships on shared shipping routes
CARB	Continue rule development for the proposed At-Berth Regulation and future updates to Commercial Harbor Craft Regulation
References:	
<p>For more information on the Carl Moyer Program: http://www.aqmd.gov/home/programs/business/business-detail?title=heavy-duty-engines&parent=vehicle-engine-upgrades</p> <p>For more information on the PRIMER program: [we are still developing PRIMER website] http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/AgendaItems/4_primer.pdf?sfvrsn=12</p> <p>CARB's At-Berth Regulation: https://www.arb.ca.gov/ports/shorepower/shorepower.htm</p> <p>CARB's Commercial Harbor Craft Regulation: www.arb.ca.gov/ports/marinevess/harborcraft.htm</p>	

Action 3: Reduce Emissions from Port Equipment (Cargo-Handling Equipment) and Drayage Trucks

Course of Action:

- Support CARB's rule development for future updates to Cargo Handling Equipment Regulation and Drayage Truck Regulation and encourage CARB to adopt zero-emission requirements by 2035 or sooner. Support Ports' implementation of CAAP measures for trucks and cargo handling equipment
- Identify additional incentive funding opportunities to accelerate adoption of cleaner port equipment and drayage trucks
- Enforcement of existing Drayage Truck Regulation
- Continue developing Facility-Based Mobile Source Measure (FBMSM) for Ports

Strategy:	
<ul style="list-style-type: none"> • Rules and Regulations • Incentives 	
Goal(s):	
<ul style="list-style-type: none"> • Provide biannual updates on CARB’s rule developments for drayage trucks and cargo handling equipment, ports’ CAAP measures, and Facility-Based Mobile Source Measure for Ports, and seek community input on progress 	
Estimated Timeline:	
<ul style="list-style-type: none"> • CARB’s Drayage Truck Regulation: 2022 CARB’s Cargo Handling Equipment Regulation: 2022 • Implementation of Ports Clean Truck Program beginning in 2020 as described in the Clean Air Action Plan (based on feasibility assessment study for trucks and truck rate study). • Implementation of Ports clean cargo handling equipment purchasing program beginning in 2020 as described in the Clean Air Action Plan (based on feasibility assessment study for cargo handling equipment). 	
Implementing Agency, Organization, Business or Other Entity:	
Name:	Responsibility:
South Coast AQMD	Continue development of FBMSM. Conduct outreach to CSC for FBMSM working groups, workshops, and meeting participation.
CARB	Conduct enhanced enforcement of existing Drayage Truck Regulation. Continue rule development for Cargo Handling Equipment and Drayage Truck Regulations. Conduct outreach to CSC for rule update workshops.
Ports	<ul style="list-style-type: none"> • Solicit input from the CSC on when and where dray-offs are occurring and conduct targeted enforcement sweeps based on the input • Implement the clean cargo handling equipment purchasing program as described in the Clean Air Action Plan (based on feasibility assessments for trucks and cargo handling equipment and truck rate study)
References:	
<p>For more information on: FBMSM: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-source-measures/comm-ports-wkng-grp CARB’s At-Berth Regulation: https://www.arb.ca.gov/ports/shorepower/shorepower.htm CARB’s Commercial Harbor Craft Regulation: www.arb.ca.gov/ports/marinevess/harborcraft.htm</p>	

CARB's Cargo Handling Equipment Regulation:

<https://ww2.arb.ca.gov/resources/documents/cargo-handling-equipment-regulation-transition-zero-emissions>

CARB's Drayage Truck Regulation: www.arb.ca.gov/drayagetruck

Port of Los Angeles and Long Beach Clean Air Action Plan:

<http://www.cleanairactionplan.org/>

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