

## 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 40% 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 %by 2035.

Figure 5c-1: Satellite view of the 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. The CSC recommended the following to reduce emissions from these sources:

- 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

Ongoing efforts to reduce emissions from the Ports, include CARB regulations and measures in the Ports 2017 Clean Air Action Plan (CAAP). Information about these efforts is provided below.

#### *South Coast AQMD's Facility-Based Mobile Source Measure (FBMSM)*

South Coast AQMD staff has initiated a public process to develop a Memorandum of Understanding (MOU) with the Ports. The MOU is intended to reduce emissions from implementing elements of the 2017 CAAP and requires approval by the South Coast AQMD Board and the Port's Boards.

#### *Annual Emissions Reporting*

The Ports each develop an annual emissions inventory. These 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 CAAP. The emissions inventories cover port-related mobile sources including ocean-going vessels, cargo handling equipment, commercial harbor craft, heavy-duty trucks, and locomotives. The Port of Los Angeles has conducted an annual emissions inventory since 2005 starting with a 2001 baseline.<sup>1</sup> The Port of Long Beach has also conducted an annual emissions inventory since 2005 and also did a special baseline report for 2002.<sup>2</sup>

#### *State Actions (CARB)*

##### *CARB's Drayage Truck Regulation<sup>3</sup>*

This regulation reduces air toxics and criteria pollutant emissions from drayage trucks. A drayage truck is any in-use on-road vehicle with a gross vehicle weight rating of greater than 26,000 pounds used for transporting cargo to and from ports and intermodal railyards. 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.

Figure 5c-2: Example of a drayage truck



##### *CARB's Mobile Cargo Handling Equipment (CHE) Regulation<sup>4</sup>*

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 railyards. 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.

Figure 5c-3: Mobile cargo handling equipment



#### *CARB's Commercial Harbor Craft Regulation<sup>5</sup>*

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 program<sup>6</sup>).

Figure 5c-4: Example of a tugboat (commercial harbor craft)



#### *CARB's At-Berth (Shore Power) Regulation<sup>7</sup>*

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 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 NOx 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<sup>8</sup>*

Ocean-Going Vessels - Fuel Rule requires the use of low sulfur marine distillate fuels in order to reduce PM, diesel PM, NOx, and SOx from ocean-going vessels within 24 nautical miles of the 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)<sup>9</sup> - 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, NOx, and SOx 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 NOx 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 Ports also provide funding for ships participating in a technology demonstration program through the joint Technology Advancement Program (TAP).<sup>10</sup> In addition, the Ports implement the Vessel Speed Reduction (VSR) Program<sup>11</sup> by providing financial incentives for ships to reduce speeds within 40 nautical miles of Point Fermin which results in less emissions from the ship's main engines.

The 2017 CAAP includes a Clean Trucks Program. Beginning in 2020, under this program, 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

to meet zero-emissions will be exempt from the rate. Initiation of the truck rate is contingent on certain elements (e.g., an economic study to establish the rate).<sup>12</sup> Implementation of this rate will provide a source of funding to further invest in clean trucks, as well as provide incentives for truck owner/operators to use cleaner vehicles. 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 Rule<sup>13</sup> in 2022.<sup>14</sup> The implementation of this rule will likely begin in 2026 or later.

*Additional Efforts by The Ports*

The Ports have several near-zero and zero-emission demonstration projects in progress. The South Coast AQMD and both ports are co-funding several on- and off-road vehicles and equipment technology demonstration projects (e.g., zero emission locomotives, Daimler’s Zero Emission Heavy Duty Trucks). The Ports have also received grants from CARB and CEC for other technology demonstration projects. Additionally, the Port of Long Beach and Southern California Edison are collaborating on pilot electric infrastructure projects on terminals.

[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.

<b>Action 1: Reduce Leaks from Oil Tankers</b>
<b>Course of Action(s):</b>
<ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> </ul>
<b>Strategies:</b>
<ul style="list-style-type: none"> <li>• Monitoring</li> <li>• Enforcement</li> <li>• Collaboration</li> </ul>
<b>Goal(s):</b>
<ul style="list-style-type: none"> <li>• Conduct surveillance and air monitoring that focuses on looking at coastal sources of pollution and evaluate data on a regular basis to identify potential leaking vessels</li> <li>• Provide quarterly or biannual updates to the CSC on South Coast AQMD enforcement activities regarding fugitive emission leaks from oil tankers</li> </ul>

<ul style="list-style-type: none"> <li>Collaborate with CARB and United States Coast Guard to evaluate pressure relief valve calibration and maintenance methods, and effectiveness in preventing fugitive emission leaks</li> </ul>	
<b>Estimated Timeline:</b>	
<ul style="list-style-type: none"> <li>Beginning mid-2020, provide the CSC with quarterly updates on surveillance monitoring activities for oil tanker leaks</li> <li>Beginning 2020, commence evaluation of pressure relief valve calibration and maintenance methods for possible rule amendment</li> </ul>	
<b>Implementing Agency, Organization, Business or Other Entity:</b>	
<b>Name:</b>	<b>Responsibility:</b>
South Coast AQMD	Use optical gas imaging technology to identify oil tankers with fugitive leaks and board marine vessels to evaluate potential violations with Rule 1142 (if a large number of Rule 1142 violations are found, assess potential rule amendment)
CARB	Conduct enhanced inspections to ensure compliance with CARB's regulations
Ports (Los Angeles and Long Beach)	Work with South Coast AQMD, CARB, and the Ports' tenants to facilitate contact between the regulatory agencies and tenants to arrange inspections of the terminals
<b>Additional Information:</b>	
Requirements for Rule 1142 (Marine Tank Vessel Operations): <a href="http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1142.pdf">http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1142.pdf</a>	

<b>Action 2: Reduce Emissions from Ships and Harbor Craft</b>	
<b>Course of Action(s):</b>	
<ul style="list-style-type: none"> <li>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</li> <li>Identify additional incentive funding opportunities to accelerate adoption of cleaner technologies for ships and harbor craft</li> <li>Conduct demonstration projects for retrofit technologies for ships and harbor craft to inform the development of new incentive programs</li> <li>Support CARB's rule development for the proposed At-Berth Regulation and future updates to Commercial Harbor Craft Regulation</li> </ul>	
<b>Strategies:</b>	
<ul style="list-style-type: none"> <li>Incentives</li> <li>Public Information and Outreach</li> <li>Rules and Regulations</li> </ul>	

<b>Goal(s):</b>	
<ul style="list-style-type: none"> <li>• Conduct one outreach event per year in the Ports area to provide information about incentives</li> <li>• Complete technology demonstration for retrofitting ships (ocean-going vessels, OGVs)</li> <li>• Work with authorities in Asia to collaborate on a Pacific Rim clean vessel incentive program</li> <li>• Participate in CARB rule development</li> <li>• Emissions Reduction Target: emissions reduced from this action contribute to the mobile source incentives target</li> </ul>	
<b>Estimated Timeline:</b>	
<ul style="list-style-type: none"> <li>• Beginning 2020, conduct incentive outreach events, when incentive programs are open for applications</li> <li>• Beginning 2019, conduct outreach for a Pacific Rim clean vessel incentive program (PRIMER initiative)</li> <li>• By 2020, sign agreement for joint clean vessel incentive program with Asian ports</li> <li>• December 2019, provide updates on demonstration projects for ships and harbor craft</li> <li>• 2020, CARB’s Commercial Harbor Craft Regulation</li> <li>• December 2019, CARB’s At-Berth Regulation</li> </ul>	
<b>Implementing Agency, Organization, Business or Other Entity:</b>	
<b>Name:</b>	<b>Responsibility:</b>
South Coast AQMD	<ul style="list-style-type: none"> <li>• Provide incentives for cleaner ships and harbor craft through the Carl Moyer Program and AB 617-related incentive funds</li> <li>• Identify additional incentive funding opportunities</li> <li>• Conduct technology demonstration projects</li> </ul>
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
<b>Additional Information:</b>	
PRIMER program is currently under development, additional information is available at: <a href="http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/AgendaItems/4_primer.pdf?">http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/AgendaItems/4_primer.pdf?</a>	

<b>Action 3: Reduce Emissions from Port Equipment (Cargo Handling Equipment) and Drayage Trucks</b>	
<b>Course of Action(s):</b>	
<ul style="list-style-type: none"> <li>• Support CARB’s rule development for future updates to Cargo Handling Equipment Regulation, Drayage Truck Regulation, development of a mandatory near zero standard for heavy-duty trucks, and encourage CARB to adopt zero-emission requirements by 2035 or sooner. Support Ports’ implementation of CAAP measures for trucks and cargo handling equipment</li> <li>• Enforcement of existing Drayage Truck Regulation</li> <li>• Identify additional incentive funding opportunities to accelerate adoption of cleaner port equipment and drayage trucks</li> <li>• Continue developing FBMSM for Ports through aMOU</li> </ul>	
<b>Strategies:</b>	
<ul style="list-style-type: none"> <li>• Rules and Regulations</li> <li>• Incentives</li> </ul>	
<b>Goal(s):</b>	
<ul style="list-style-type: none"> <li>• Provide biannual updates on CARB’s rule developments for drayage trucks and cargo handling equipment, Ports’ CAAP measures, and FBMSM for Ports, and seek community input on progress</li> </ul>	
<b>Estimated Timeline:</b>	
<ul style="list-style-type: none"> <li>• Beginning 2022, support CARB’s Drayage Truck Regulation and CARB’s Cargo Handling Equipment Regulation</li> <li>• Beginning 2020, implement Ports’ Clean Truck Program as described in the CAAP (based on feasibility assessment study for trucks and truck rate study and the promulgation of near zero emissions manufacturing standards by CARB)</li> <li>• Beginning in 2020, implement Ports’ clean cargo handling equipment purchasing program as described in the CAAP (based on feasibility assessment study for cargo handling equipment)</li> <li>• Beginning in Fall 2019, update the CSC on CARB’s enforcement of the existing Drayage Truck Regulation</li> <li>• Beginning in Fall 2019, identify additional incentive funding opportunities for cleaner port equipment and drayage trucks</li> <li>• Continue development of FBMSM for Ports through a MOU</li> </ul>	
<b>Implementing Agency, Organization, Business or Other Entity:</b>	
<b>Name:</b>	<b>Responsibility:</b>
South Coast AQMD	Continue development of FBMSM through a MOU and conduct outreach to CSC for FBMSM working groups, workshops, and meetings



CARB	<ul style="list-style-type: none"> <li>• Conduct enhanced enforcement of existing Drayage Truck Regulation</li> <li>• Continue rule development for Cargo Handling Equipment and Drayage Truck Regulations</li> <li>• Conduct outreach to CSC for rule update workshops</li> </ul>
Ports	<ul style="list-style-type: none"> <li>• Solicit input from the CSC on when and where dray-offs are occurring and conduct targeted enforcement sweeps based on the input</li> <li>• 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)</li> </ul>
Additional Information:	
<ul style="list-style-type: none"> <li>• San Pedro Bay Ports Clean Air Action Plan 2018 Feasibility Assessment for Drayage Trucks: <a href="http://polb.com/civica/filebank/blobload.asp?BlobID=15011">http://polb.com/civica/filebank/blobload.asp?BlobID=15011</a></li> <li>• San Pedro Bay Ports Clean Air Action Plan Draft 2018 Feasibility Assessment for Cargo- Handling Equipment: <a href="http://www.cleanairactionplan.org/documents/draft-2018-feasibility-assessment-for-cargo-handling-equipment.pdf/">http://www.cleanairactionplan.org/documents/draft-2018-feasibility-assessment-for-cargo-handling-equipment.pdf/</a></li> <li>• FBMSM: <a href="http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-source-measures/comm-ports-wkng-grp">http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-source-measures/comm-ports-wkng-grp</a></li> </ul>	

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