

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Preliminary Draft Staff Report

**Proposed Rule 4001 – Maintenance of AQMP Emission Reduction
Targets at Commercial Marine Ports**

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EXECUTIVE SUMMARY

The South Coast Air Quality Management District (SCAQMD or District) is proposing a rule to ensure emission reductions associated with sources operating in commercial marine ports as provided in the Final 2012 Air Quality Management Plan (AQMP) are achieved and maintained in 2014 and subsequent years. Proposed Rule (PR) 4001 – Maintenance of AQMP Emission Reduction Targets at Commercial Marine Ports, would require annual reporting of emissions beginning in 2014 through 2020 from the Port of Los Angeles (POLA) and the Port of Long Beach (POLB). If the emission targets proposed in PR 4001 are not met, an emission reduction plan would be prepared by the Ports that contains control strategies to eliminate the shortfalls. The full text of PR 4001 is provided in Appendix A.

INTRODUCTION

Despite the significant progress that has been made in reducing mobile and stationary source emissions over the past 20 years, the South Coast Air Basin (Basin) continues to experience some of the worst air quality in the nation. The Basin is classified as a serious nonattainment area for fine particulate matter (PM_{2.5}). In addition, the Basin is one of two areas in the country classified by U.S. Environmental Protection Agency (EPA) as an extreme nonattainment area for ozone.

POLA and POLB, comprising the San Pedro Bay Ports complex, are the largest in the nation in terms of container throughput. More than 40% of all U.S. container trade flows through the two Ports. Collectively they are the single largest fixed source of air pollution in the Basin. Marine port-related emissions of oxides of nitrogen (NO_x), sulfur oxides (SO_x), and fine particulate matter (PM_{2.5}) represent a significant fraction of NO_x, SO_x, and PM emissions in the Basin and cause significant localized health impacts. Port-related sources as defined for the purposes of this rule, are marine vessels, locomotives, trucks, commercial harbor craft and cargo handling equipment.

As shown in the 2008 emission inventories from the Ports^{1,2}, port-related sources emitted 3.7 tons/day of PM_{2.5} along with 78.6 tons/day of NO_x and 25.5 tons/day of SO_x, which are PM_{2.5} precursors. The Ports continue to be among the largest sources of PM_{2.5} and PM_{2.5} precursors in the Basin. Without substantial control of emissions from port-related sources, it will not be possible for the region to attain federal ambient air quality standards for PM_{2.5} or ozone. Many programs and regulations currently implemented by international, federal, state, and local agencies will provide the necessary controls. However, there is a need to ensure that the emissions reductions are achieved and maintained. As such, the 2012 Air Quality Management Plan (AQMP) provides a control measure to backstop emission reductions expected to occur from port-related sources.

¹ The Port of Los Angeles Inventory of Air Emissions for Calendar Year 2008 (revised 2011)

² Port of Long Beach Air Emissions Inventory - 2008 (revised 2011)

The proposed rule implements the 2012 AQMP Control Measure IND-01 - Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities. The proposed rule focuses on the attainment of the 24-hour PM_{2.5} ambient air quality standard and future year baseline emissions from port-related sources to ensure that emissions from port-related sources meet expected emission reductions.

BACKGROUND

Source Description

POLA is the largest manmade harbor in the Western Hemisphere, serving as the largest container port in the United States and the eighth largest in the world. It is a critical hub in the international supply chain, encompassing 7,500 acres and 24 terminals. POLA serves approximately 80 shipping companies and agents along 43 miles of waterfront. POLA leases to over 300 commercial tenants and provides slips for approximately 6,000 pleasure craft, sport fishing boats, and charter vessels.

POLB serves as the second largest container port in the United States and the 16th busiest container port in the world. Similar in operation to POLA, POLB is considered a key transportation hub in the global trade marketplace consisting of 28 miles of waterfront, 3,200 acres of land, 10 piers, and 80 berths.

In 2006 the Ports, adopted the San Pedro Bay Ports Clean Air Action Plan (CAAP) to reduce NO_x, SO_x and PM_{2.5} to levels that assured port-related sources would decrease their “share” of regional emissions and assist the region to reach state and federal ambient air quality standards.

Emission reduction strategies in the CAAP are implemented through new leases or port-wide tariffs, Memoranda of Understanding (MOU), voluntary action, grants or incentive programs. These measures have included programs to deploy low emission drayage trucks, shore-power, and low emission cargo handling equipment. The Ports have established incentive programs for implementing low emission technologies and operational controls such as preferential routing of new low emission vessels meeting International Maritime Organization (IMO) Tier 2 and 3 NO_x standards, and vessel speed reduction inside California waters. In addition, the Ports have implemented a Technology Advancement Program to develop and encourage deployment of clean technologies through demonstration projects.

In addition to the strategies listed above, reductions from international, federal and state regulations and programs will be realized at the Ports. Most of the Port related source categories will see substantial reductions as these regulations and programs are implemented as newer and cleaner vehicles, ships, and equipment enter the fleets operating at the Ports. Proposed Rule 4001 ensures that the expected emission reductions from all regulations and programs are realized and maintained at the Ports.

National Ambient Air Quality Standards (NAAQS)

In 1997, the U.S. EPA established annual and 24-hour NAAQS for PM_{2.5} for the first time. In 2006, EPA adopted a more stringent 24-hour NAAQS for PM_{2.5} of 35 ug/m³ with an initial attainment deadline of 2014.

In 1997, the U.S. EPA also established an 8-hour NAAQS for ozone for the first time at 80 ppb. In 2008, EPA adopted a more stringent 8-hour NAAQS for ozone of 75 ppb. Both standards are in force with the 1997 80 ppb attainment deadline in 2023 and the 2008 75 ppb attainment deadline in 2032.

2012 Air Quality Management Plan (AQMP)

The District submitted the 2012 AQMP to demonstrate attainment of the 24-hour PM_{2.5} standard by 2014. The 2012 AQMP was based on the latest emission inventory methodologies and forecasts of future emissions for 2014, 2019, and 2023. As part of the 2012 AQMP, a control measure was included to ensure that port-related emission reductions incorporated in the 2014 and 2019 base years emissions will actually be achieved. This measure, “IND-01- Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities,” sets emission reduction targets to be met. The measure provides for reporting of annual emissions from port-related sources and, if applicable, updated emissions forecasts for selected years to be compared to the emission forecasts in the 2012 AQMP. If the emission reduction targets are met, no further action is required. If the emissions show that the targets are not met, then a shortfall in emission reductions has or will occur. As such, an Emission Reduction Plan must be developed by the Ports and submitted to the District which identifies additional control strategies to help eliminate the shortfall.

Regulatory History

Emissions from sources associated with the Ports—marine vessels, commercial harbor craft, cargo handling equipment, locomotives, and trucks—have historically been regulated primarily by international, federal or state authorities. The IMO, an agency of the United Nations, has established NOx emissions limitations and fuel sulfur specifications for oceangoing vessels; U.S. EPA has adopted emission standards for new locomotives, new trucks and some marine engines; and CARB has adopted standards for new trucks, in-use trucks, in-use off-road equipment, in-use cargo handling equipment, and new and in-use marine engines. Neither federal nor international law explicitly requires U.S. EPA or IMO regulations to be sufficiently stringent to meet the needs of a particularly polluted region such as the Basin, and the rules adopted by those bodies have not met those needs. Key regulatory and other actions taken to date are as follows:

- *International Maritime Organization Emissions and Fuel Standards.* The IMO MARPOL Annex VI, which came into force in May 2005, set new international NOx emission limits on Category 3 (>30 liters per cylinder displacement) marine engines installed on new vessels retroactive to the year 2000. In October 2008, the IMO adopted an amendment which places a global limit on marine fuel sulfur content of 0.1 percent by 2015 for specific areas known as Emission Control Areas (ECA). The ECA extends 200 nautical miles from the U.S. coast. The South Coast Air Basin off-coast waters are included in the ECA and ships calling at POLA and POLB have to meet this new fuel

standard. In addition, the 2008 IMO amendment required new ships built after January 1, 2016 that enter an ECA to meet a Tier III NOx emission standard which is 80 percent lower than the Tier I emission standard.

- *EPA Marine Vessel Regulations.* In 2010, U.S. EPA adopted standards that apply to Category 3 (C3) engines installed on U.S. vessels and to marine diesel fuels produced and distributed in the United States. That rule added two new tiers of engine standards for C3 engines consistent with the IMO standards described above. It also includes a regulatory program to implement IMO MARPOL Annex VI in the United States, including engine and fuel sulfur limits, and extends the ECA engine and fuel requirements to U.S. internal waters (i.e., rivers, lakes, etc.). U.S. EPA is also a participating member of IMO and provided input to the fuel sulfur and NOx emission standards adopted by IMO and works within international organizations to establish global engine and fuel standards.
- *EPA Emission Standards for Locomotives.* To reduce emissions from switch and line-haul locomotives, the EPA in 2008 established a series of increasingly strict emission standards for new or remanufactured locomotive engines. The emission standards are implemented by “Tier” with Tier 0 as the least stringent and Tier 4 being the most stringent. EPA also established remanufacture standards for both line haul and switch engines. For Tiers 0, 1, and 2, the remanufacture standards are more stringent than the new manufacture standards for those engines for some pollutants.
- *EPA and CARB Emission Standards for New Trucks.* To reduce emissions from on-road, heavy-duty diesel trucks, EPA established a series of cleaner emission standards for new engines, starting in 1988. The EPA promulgated the final and cleanest standards with the 2007 Heavy-Duty Highway Rule. Starting with model year 2010, all new heavy-duty trucks have to meet the final emission standards specified in the rule.
- *CARB In-use Fleet Rules.* Between 2005 and 2010, CARB adopted several rules that reduce emissions at the Ports by requiring accelerated modernization of equipment by replacing or repowering old equipment with new equipment. These rules include: In-Use Truck and Bus Rule, In-use Off-road Equipment Rule, Cargo Handling Rule, Drayage Truck Rule, Commercial Harbor Craft Rule, and the At-Berth Auxiliary Engine (Shore power) Rule. The majority of marine vessel emissions are created by main propulsion engines, but auxiliary engines emissions are important, in part because they occur at dock in closer proximity to persons in and around the port.
- *CARB Marine Fuel Rule.* In December 2005, the CARB Board voted to adopt fuel sulfur standards for marine auxiliary engines, including those on foreign flag vessels, in waters out to 24 nautical miles. The rule limited sulfur content in marine diesel fuel to 5,000 to 15,000 ppm depending on fuel type beginning in 2009, decreasing to 5,000 to 10,000 ppm beginning in August 2012 and to 1,000 ppm sulfur content in January 1, 2014.
- *MOUs.* In 1998, CARB entered into an MOU with the Union Pacific and Burlington Northern Santa Fe railroads which established a fleet average emissions limit for locomotives operating in the Basin. The intended effect of this MOU is to accelerate introduction of Tier 2 locomotives (achieving an approximate 57% level of NOx control) in this region. In June 2005, CARB entered into a second MOU with the same

two railroads that is intended to reduce health risks near railyards and is projected by CARB to achieve a 20% reduction in diesel particulate emissions (DPM) emissions. Finally, several years ago, the ports, shipping interests, and regulatory agencies entered into a MOU seeking voluntary reductions in vessel speed to reduce NOx emissions.

- *SCAQMD Rules Governing Locomotive Idling and Risk Assessment.* In 2005 and 2006, the District adopted rules requiring railroads to minimize unnecessary locomotive idling, and to develop emissions inventories and health risk assessments and notify the public of health risks. The idling rules have been enjoined from implementation until they have been federally approved, through SIP approval, and harmonized with the Interstate Commerce Commission Termination Act (ICCTA). The SCAQMD has submitted the rules to the U.S. EPA for approval into the SIP.

San Pedro Bay Ports Clean Air Action Plan

The Ports approved and adopted the CAAP in late 2006. The CAAP outlines a path for the San Pedro Bay Ports and other stakeholders to institute measures that the Ports will take to reduce emissions from Port facilities. The CAAP was a 5-year plan, beginning with fiscal year (FY) 2006/2007, and ending with FY 2010/2011. In 2010, the CAAP was updated reflecting new emission inventories and longer term emission reduction goals.

The CAAP involves investments by the two ports for air quality programs. The CAAP commits the Ports to develop tariff-based incentives and requirements, such as vessel speed reduction incentives and port-mandated fuel requirements, to curb harmful emissions. Additional commitments for the Ports include, working with air quality regulatory agencies (SCAQMD, CARB, and U.S. EPA) to establish San Pedro Bay Air Quality Standards, as well as mechanisms for tracking improvements in air quality through annual emission inventories. Lastly, in addition to the San Pedro Bay Air Quality Standards and Source Specific Standards for marine vessels, locomotives, trucks, commercial harbor craft and cargo handling equipment, the Ports commit to Project Specific Standards in the CAAP.

The CAAP focuses primarily on reducing DPM along with NOx and SOx. The goals set forth in the CAAP include:

- Health Risk Reduction Standard: 85% reduction in population-weighted cancer risk by 2020
- Emission Reduction Standards:
 - 2014, reduce emissions by 72% for DPM, 22% for NOx, and 93% for SOx
 - 2023, reduce emissions by 77% for DPM, 59% for NOx, and 93% for SOx

The CAAP encompasses 11 specific control measures including two for heavy duty drayage trucks, five for ocean going vessels, three for railroads, and one each for cargo handling equipment and commercial harbor craft. The Ports rely upon one or more of the following implementation strategies for each control measure: leases or operating agreements, MOUs, tariffs, incentives, and impact fees. Most of the control measures are based on existing IMO, federal, or state rules. However, six control measures where the CAAP went beyond existing regulatory requirements or accelerated the implementation of current IMO, EPA, or CARB rules, included HDV1 to accelerate the introduction of 2007/2010 on-road heavy-duty drayage trucks; HDV2 to incentivize installation of natural gas refueling infrastructure for heavy duty vehicles; OGV1 to reduce ocean-going vessel speeds; OGV3 and OGV4 to

accelerate use of low-sulfur fuel in ocean-going vessels; and RL3 to restrict the use of high-emitting locomotives on Port property.

- *HDV1 – Performance Standards for On-Road Heavy-Duty Vehicles (Clean Truck Program).* This control measure requires that all on-road trucks entering the ports comply with the Clean Truck Program. Several milestones occurred early in the program implementation, but the current requirement bans all drayage trucks not meeting the 2007 on-road heavy-duty truck emission standards from port property. This program has accelerated the introduction of clean trucks sooner than would have occurred under the state-wide drayage truck regulation framework.
- *HVD2 - Natural Gas Refueling Infrastructure.* This control measure provides incentive funding to install natural gas fuel stations in or near the Ports. The stations would be available to on-road natural gas fueled trucks at or visiting the Ports. This program facilitates use of low emission natural-gas fueled trucks and is not required by any federal, state or local agency rule or regulation.
- *OGV1 –Vessel Speed Reduction Program (VSR).* Under this voluntary program, the Port requested that ships coming into the Ports reduce their speed to 12 knots or less within 20nm of the Point Fermin Lighthouse. The program started in May 2001. The Ports expanded the program out to 40 nm from the Point Fermin Lighthouse in 2010.
- *OGV3/OGV4 – Low Sulfur Fuel for Auxiliary Engines, Auxiliary Boilers and Main Engines.* OGV3 reduces emissions for auxiliary engines and auxiliary boilers of OGVs during their approach to and departure from the Ports, including hotelling, by switching to MGO or MDO with a fuel sulfur content of 2,000 ppm or less within 40 nm from Point Fermin. OGV4 Control measure reduces emissions from main engines during their approach to and departure from the Ports. OGV3 and OVV4 are implemented as terminal leases are renewed.
- *RL3 – New and Redeveloped Near-Dock Rail Yards.* The Ports have committed to support the goal of accelerating the natural turnover of line-haul locomotive fleet to at least 95 percent Tier 4 by 2020. In addition, this control measure establishes a minimum standard goal that the Class 1 (UP and BNSF) locomotive fleet associated with new and redeveloped near-dock rail yards to use 15-minute idle restrictors and ULSD or alternative fuels. As part of the environmental review process for upcoming rail projects, RL-3 calls for 40% of the line-haul locomotives accessing Port property to meet Tier 3 emission standards and 50% to meet Tier 4 emission standards.

Other measures formalize compliance with existing regulations through lease requirements or agreements with individual terminal operators. These include:

- *OGV2 - Reduction of At-Berth OGV Emission.* Compliance with CARB's At-Berth regulation is facilitated by providing the electrical infrastructure needed for shore power and to incentivize development of alternative technologies that treat auxiliary engine exhaust emissions.
- *OGV5 - Cleaner Engines.* Beginning in 2014, new vessels will be built with cleaner (lower NOx) engines than existing vessels in order to meet international marine engine standards. This measure requires compliance to the international standards and incentivizes visits of those vessels.

- *OGV6 - OGV Engine Emissions Reduction Technology Improvements.* This measure seeks to retrofit existing vessel engines with improved technologies that provide lower emissions. Port funds are used for demonstrations to help assess the emission reduction benefits of the technologies and to promote their implementation by OGV operators.
- *CHE1 - Performance Standards for CHE.* This measure requires purchase of the cleanest cargo handling equipment available and establishes compliance deadlines that are incorporated in terminal leases which require faster turnover than CARB's regulation.
- *HCI - Performance standards for Commercial Harbor Craft.* Compliance with CARB's commercial harbor craft regulation is required in leases and earlier compliance via incentive funding is encouraged including the development and use of shore power for tugs.
- *RL1 - PHL Rail Switch Engine Modernization.* This measure required PHL to replace existing Tier 0 locomotives with Tier 2 engines and only purchase future Tier 3 locomotives. The primary objectives of this measure have been achieved.
- *RL2 - Class 1 Line-Haul and Switcher Fleet Modernization.* This measure tracks progress towards implementation of the MOU between Class 1 railroads and CARB. In addition, this measure can provide support for demonstrations of low emission locomotive technologies.

Finally, to track the Ports' progress, annual emissions inventories are prepared for each Port. The Ports develop the inventories with guidance from a Technical Working Group comprised of staff from SCAQMD, CARB, EPA, and the two Ports to ensure the most current inventory methodologies are used. The final inventories are approved by the Ports' respective Board of Harbor Commissioners.

AIR QUALITY IMPACTS FROM THE SAN PEDRO BAY PORTS

The San Pedro Bay Ports collectively are the single largest fixed sources of air pollution in Southern California. Emissions from port-related sources, such as marine vessels, locomotives, trucks, commercial harbor craft and cargo handling equipment, adversely affect air quality in the local port area as well as regionally. As shown in the 2008 emission inventories from the Ports, port-related sources emitted 78.6 tons/day of NO_x, 3.7 tons/day of PM_{2.5} and 25.5 tons/day of SO_x; and continue to be among the largest sources of PM_{2.5} and PM_{2.5} precursors. Without substantial control of emissions from port-related sources, it will not be possible for the region to attain federal ambient air quality standards for ozone or PM_{2.5}. Many programs and regulations currently implemented by international, federal, state, and local agencies will provide significant emission reduction benefits. However, additional controls are needed to attain federal ambient air quality standards. The amount of additional controls is based on the expected emission reductions from current regulations and voluntary programs. Should the expected emission reductions not be realized, the attainment demonstrations for the 24-hour PM_{2.5} air quality standard will be jeopardized.

Emissions by Source Category

Port related air emissions are broken down into the following five source categories:

- Ocean-going vessels
- Commercial Harbor Craft
- Off-road cargo handling equipment
- Railroad locomotives
- On-road heavy-duty vehicles

A brief description of the five source categories is provided below.

Ocean Going Vessels (OGV). This category consists of vessels that regularly transit to and from international waters, usually flag of convenience (foreign-flagged) cargo vessels. The types of vessels that call at the Ports include: auto carriers, bulk carriers, containerships, cruise ships, ocean-going tugboats, refrigerated cargo vessels, roll-on roll-off ships, and liquid bulk tankers.

Commercial Harbor Craft (CHC). This category consists of vessels that operate almost exclusively within the ECA, including assist tugboats, towboats and push boats, ferries, excursion vessels, crew boats, work boats, government vessels, dredges and dredging support and commercial fishing vessels.

Cargo Handling Equipment (CHE). This category is dedicated to a specific terminal for cargo transfer purposes. CHE moves cargo within terminals and other off-road areas. Included in this category are yard tractors, top-picks, side picks, rubber-tired gantry cranes and forklifts.

Railroad Locomotives (RL). This category includes railroad locomotives transporting Port-related cargo within the South Coast Air Basin, as well as in-port switching operations.

Heavy-Duty Vehicles (HDV). This category is used for diesel-fueled on-road trucks, including those trucks that carry Port related cargo throughout the South Coast Air Basin.

PM_{2.5} Equivalent Emissions

Emission reduction targets are developed using the concept of PM_{2.5} Equivalent Emissions. The equivalents are developed by scaling the emissions of the PM_{2.5} precursors (NO_x and SO_x) based on their potential to generate PM_{2.5} particulates, and then are added to the emissions of the directly emitted PM_{2.5} to better characterize the total PM_{2.5} emissions. Chapter 5 of the 2012 AQMP includes a discussion of PM_{2.5} and the principal precursors of atmospherically produced PM_{2.5} aerosols, ie, NO_x (precursor to nitrates) and SO_x (precursor to sulfates). The 2012 AQMP includes a table of the relative importance of NO_x and SO_x in producing PM_{2.5}. For the 2012 AQMP, these contribution factors were used with forecasted emission inventories to predict future PM_{2.5} atmospheric concentrations as part of demonstrating that the 24-hour PM_{2.5} standard will be achieved in 2014. Similarly, PR 4001 uses these factors to determine future PM_{2.5} equivalent emissions from the Ports' PM_{2.5}, NO_x, and SO_x emissions. These factors are shown in Table 1 below.

Table 1. Relative Contributions of Precursor Emissions Reductions to Future-Year 24-hour PM_{2.5} Concentrations*

PRECURSOR	PM _{2.5} COMPONENT (µg/m ³)	STANDARDIZED CONTRIBUTION TO AMBIENT PM _{2.5} MASS
NO _x	Nitrate	Factor of 1
SO _x	Sulfate	Factor of 7.8
PM _{2.5}	Elemental Carbon & Others	Factor of 14.8

* Developed from Table 5-2, Chapter 5, Final 2012 Air Quality Management Plan

Using the factors in Table 1 and modifying them to the appropriate scaling factor, as shown in the equations below yields the definition of PM_{2.5} Equivalents:

$$\begin{aligned} \text{PM}_{2.5} \text{ Equivalent} &= 1/14.8 * \text{NO}_x + 7.8/14.8 * \text{SO}_x + \text{PM}_{2.5} \\ &= 0.07 * \text{NO}_x + 0.53 * \text{SO}_x + \text{PM}_{2.5} \end{aligned}$$

Current Emissions from Port-Related Activities

Summary tables for calendar years 2005 and 2008 by source category for POLA's and POLB's combined emission inventory are shown in Tables 2 and 3 respectively. The Ports' CAAP uses 2005 as the baseline year. The 2012 AQMP and PR 4001 use 2008 as the baseline. Tables 2 and 3 differ slightly from the original values reported by the Ports for 2005 and 2008 due to changes in calculation methodologies used for the 2012 AQMP.

Table 2. Ports Combined 2005 Total Port-Related Emissions (tons/day)

Category	NO _x	SO _x	PM _{2.5}	PM _{2.5} Eq
Ocean-going vessels	32.78	32.62	2.83	22.41
Commercial Harbor craft	6.65	0.03	0.25	0.73
Cargo handling equipment	7.81	0.05	0.26	0.83
Rail locomotives	8.18	0.48	0.25	1.08
Heavy-duty vehicles	32.02	0.21	1.13	3.48
Total	87.5	33.4	4.7	28.5

Source: The Port of Los Angeles Inventory of Air Emissions for Calendar Year 2011
Port of Long Beach Air Emissions Inventory - 2011

Table 3. Ports Combined 2008 Total Port-Related Emissions (tons/day)

Category	NOx	SOx	PM _{2.5}	PM _{2.5} Eq
Ocean-going vessels	28.77	25.44	2.20	17.69
Commercial harbor craft	7.09	0.00	0.28	0.78
Cargo handling equipment	6.41	0.01	0.19	0.65
Rail locomotives	6.63	0.05	0.20	0.67
Heavy-duty vehicles	29.71	0.02	0.81	2.90
Total	78.6	25.5	3.7	22.7

Source: The Port of Los Angeles Inventory of Air Emissions for Calendar Year 2008 (revised 2011)
Port of Long Beach Air Emissions Inventory - 2008 (revised 2011)

Table 4 presents emission inventory data for calendar year 2012, the most recent available. Ocean going vessels produce the majority of NO_x, SO_x, and PM_{2.5} emissions. Since the 2008 baseline inventory, the combined Ports emission inventories of NO_x, SO_x, PM_{2.5} and PM_{2.5} Eq have been reduced by 50%, 84%, 62%, and 73% respectively indicating that steps taken to reduce port-related emissions have been effective.

Table 4. Ports Combined 2012 Total Port-Related Emissions (tons/day)

Category	NOx	SOx	PM _{2.5}	PM _{2.5} Eq
Ocean-going vessels	21.16	3.99	0.87	4.47
Commercial Harbor craft	4.18	0.01	0.18	0.47
Cargo handling equipment	3.79	0.01	0.12	0.39
Rail locomotives	4.13	0.01	0.13	0.42
Heavy-duty vehicles	6.12	0.02	0.10	0.54
Total	39.4	4.0	1.4	6.3

* May not sum due to rounding

Sources: The Port of Los Angeles Inventory of Air Emissions for Calendar Year 2012
Port of Long Beach Air Emissions Inventory - 2012

Emission Reduction Targets

Proposed Rule 4001 requires, should reduction targets not be achieved, that the Ports submit an emission reduction plan outlining control strategies to be implemented to meet the emission reduction targets. While the Ports have not submitted emission forecasts for 2014 and 2019 using the 2012 AQMP inventory methodologies, the CAAP included an overall emission reduction goal for 2014 of 22% for NO_x, 93% for SO₂, and 72% for PM compared

to the CAAP 2005 baseline. Applying those reduction factors to the 2005 baseline inventory in Table 2, the overall combined target emission reduction in 2014 shown in Table 5 is 75%.

Table 5. Ports Combined 2014 CAAP Emissions Reduction Using 2011 Methodology (tons/day)

	NOx	SOx	PM_{2.5}	PM_{2.5} Eq
CAAP 2005 Baseline (Table 2)	87.45	33.39	4.73	28.54
CAAP 2014 Reduction	22%	93%	72%	-----
2014 Estimated Inventory	68.21	2.34	1.32	7.34
Overall PM_{2.5} Eq Reduction				75%

The emission reduction targets in PR 4001 are based on the percent reduction in Basin-wide emissions between the 2012 AQMP baseline year (2008) and the Basin-wide emissions forecast for 2014 and 2019 for the five categories of port-related emissions reported annually by the Ports. The 2008 TEU shipments reported by the Ports were within 1% of the 2005 TEU shipments suggesting that overall Port activity was similar in both years. Additionally, no new rules or regulations were implemented between 2005 and 2008 and while fleet turnover to cleaner equipment did occur, the effect of this on the emissions would be small over the short three year timeframe. This along with the similar Port activity suggests that the emissions from the Ports would be close in magnitude in 2005 and 2008. Therefore the expected change in emissions in 2014 calculated from the forecasted emissions in the CAAP and the AQMP should be very close in value as the emission forecasts are based on the same regulatory controls and programs.

To calculate the emission reduction targets, District staff applied the Basin-wide percent reductions from 2008 to 2014 and 2019 to the Ports' 2008 inventory to arrive at the forecasted emissions for each of the five categories of port-related sources. The percent reduction for each port-related source category in 2014 and 2019 was first calculated. That percent reduction for each category was then applied to the 2008 Port inventory to obtain the 2014 and 2019 Port forecasts. The Port emissions of PM_{2.5} Equivalent were calculated for 2008, 2014 and 2019 from the corresponding NOx, SOx, and PM_{2.5} combined Port emissions for each year. Tables 6 and 7 show how the emission forecasts for 2014 and 2019 for the Ports were calculated. The calculation is represented by the following general formulas for NOx, SOx, and PM_{2.5}:

$$2014 \text{ Port Forecast} = 2008 \text{ Port Inventory} * \frac{2014 \text{ AQMP Forecast}}{2008 \text{ AQMP Inventory}}$$

$$2019 \text{ Port Forecast} = 2008 \text{ Port Inventory} * \frac{2019 \text{ AQMP Forecast}}{2008 \text{ AQMP Inventory}}$$

The resulting net reduction in the Ports' PM_{2.5} Equivalent emissions from the Ports' 2008 baseline is 75% for 2014 and 2019. This is consistent with the reduction calculation using the CAAP 2005 baseline and 2014 target emission reduction percent (75%) from Table 5.

Table 6. Ports Combined 2014 Total Port-Related Emissions (tons/day)*

CATEGORY	NOx	SOx	PM_{2.5}
2008 SCAB Inventory (2012 AQMP)			
Ocean Going Vessels	40.7	36.7	3.8
Commercial Harbor Craft	17.7	0.0	0.7
Cargo Handling Equipment Port total	6.6	0.0	0.2
Freight Rail Locomotives	22.1	0.1	0.6
Heavy Duty Diesel Trucks (>33001 lb.)	156.6	0.2	5.8
Total	243.7	37.0	11.2
2014 SCAB Forecast (2012 AQMP)			
Ocean Going Vessels	35.1	2.6	0.8
Commercial Harbor Craft	11.1	0.0	0.4
Cargo Handling Equipment Port total	2.9	0.0	0.1
Freight Rail Locomotives	17.8	0.0	0.5
Heavy Duty Diesel Trucks (>33001 lb.)	74.0	0.2	1.5
Total	140.9	2.8	3.2
2014/2008 SCAB Percent Reduction			
Ocean Going Vessels	14%	93%	79%
Commercial Harbor Craft	37%	0%	44%
Cargo Handling Equipment Port total	56%	-33%	77%
Freight Rail Locomotives	20%	87%	20%
Heavy Duty Diesel Trucks (>33001 lb.)	53%	3%	75%
Total	42%	92%	72%
2008 POLA/POLB Inventory			
Ocean Going Vessels	28.8	25.4	2.2
Commercial Harbor Craft	7.1	0.0	0.3
Cargo Handling Equipment	6.4	0.0	0.2
Locomotives	6.6	0.0	0.2
Heavy Diesel Trucks	29.7	0.0	0.8
Total	78.6	25.5	3.7
2014 POLA/POLB Forecast			
Ocean Going Vessels	24.8	1.8	0.5
Commercial Harbor Craft	4.4	0.0	0.2
Cargo Handling Equipment	2.8	0.0	0.0
Locomotives	5.3	0.0	0.2
Heavy Diesel Trucks	14.0	0.0	0.2
Total	51.2	1.8	1.0

* May not sum to total due to rounding

Table 7. Ports Combined 2019 Total Port-Related Emissions (tons/day)*

CATEGORY	NOx	SOx	PM_{2.5}
2008 SCAB Inventory (2012 AQMP)			
Ocean Going Vessels	40.7	36.7	3.8
Commercial Harbor Craft	17.7	0.0	0.7
Cargo Handling Equipment Port total	6.6	0.0	0.2
Freight Rail Locomotives	22.1	0.1	0.6
Heavy Duty Diesel Trucks (>33001 lb.)	156.6	0.2	5.8
Total	243.7	37.0	11.2
2019 SCAB Forecast (2012 AQMP)			
Ocean Going Vessels	36.0	3.2	1.0
Commercial Harbor Craft	8.9	0.0	0.3
Cargo Handling Equipment Port total	2.3	0.0	0.1
Freight Rail Locomotives	19.0	0.0	0.4
Heavy Duty Diesel Trucks (>33001 lb.)	54.0	0.2	1.0
Total	120.2	3.4	2.7
2019/2008 SCAB Percent Reduction			
Ocean Going Vessels	11%	91%	75%
Commercial Harbor Craft	50%	0%	63%
Cargo Handling Equipment Port total	65%	-100%	77%
Freight Rail Locomotives	14%	84%	31%
Heavy Duty Diesel Trucks (>33001 lb.)	66%	-8%	84%
Total	51%	91%	76%
2008 POLA/POLB Inventory			
Ocean Going Vessels	28.8	25.4	2.2
Commercial Harbor Craft	7.1	0.0	0.3
Cargo Handling Equipment	6.4	0.0	0.2
Locomotives	6.6	0.0	0.2
Heavy Diesel Trucks	29.7	0.0	0.8
Total	78.6	25.5	3.7
2019 POLA/POLB Forecast			
Ocean Going Vessels	25.5	2.2	0.6
Commercial Harbor Craft	3.6	0.0	0.1
Cargo Handling Equipment	2.2	0.0	0.0
Locomotives	5.7	0.0	0.1
Heavy Diesel Trucks	10.2	0.0	0.1
Total	47.2	2.3	1.0

* May not sum to total due to rounding

SUMMARY OF PROPOSED RULE 4001

Proposed Rule 4001 is a newly proposed SCAQMD rule that is based on the following key concepts provided in Control Measure IND-01 in the Final 2012 AQMP.

- The Ports would report emissions of NO_x, SO_x, and PM_{2.5} on an annual basis.
- The NO_x, SO_x, and PM_{2.5} emission are converted to a “PM_{2.5} Equivalent” value and the percent reduction in PM_{2.5} Equivalent emission from the 2008 Baseline is compared to the reduction target of 75%.
- PR 4001 backstop requirements become effective only if port-related sources do not meet the emission levels in the Final 2012 AQMP or are not maintained between 2014 and 2020.
- If the percent reduction meets or exceeds the 75% reduction target, the Ports will have no additional obligations under the proposed rule.
- If the percent reduction is less than the reduction target, the Ports would submit an emission reduction plan to address the emission reduction shortfall.
- The Ports would develop and submit an emission reduction plan identifying control strategies to eliminate the shortfall. The control strategies would be implemented within 18 months of plan approval.
- PR 4001 would not require any strategy that lacks legal authority or is not cost-effective as defined in the rule.
- If the emission reduction plan does not provide sufficient strategies to eliminate the shortfall, strategies that could not be implemented within 18 months, but could be implemented within 30 months can be included.
- If an emission reduction plan is submitted, the SCAQMD will approve or disapprove the plan in whole or in part.

The proposed rule applies to commercial marine ports, specifically the Ports of Los Angeles and Long Beach. The Ports may comply separately or jointly with provisions of the proposed rule. The complete rule language is contained in Appendix A. The rule requirements are summarized below.

Subdivision (A) - Purpose

The purpose of PR4001 is to achieve and maintain the federal 24-hour PM_{2.5} standard by ensuring that emissions from the Ports of Los Angeles and Long Beach do not exceed the estimated levels in the 2012 Air Quality Management Plan and to formalize a process the Ports must follow to meet the levels should they be exceeded.

Subdivision (B) - Applicability

PR4001 applies to the Ports of Los Angeles and Long Beach. The Ports may comply with the rule requirements jointly or separately.

Subdivision (C) - Definitions

PR4001 lists the following eight definitions:

- **Baseline Emissions** - annual emissions of NO_x, SO_x, or PM_{2.5} from all port related sources in 2008 as shown in the Final 2012 AQMP. This definition ensures that emissions used in the rule are consistent with emissions used in the AQMP.
- **Commercial Marine Port (or Ports)** – the Ports of Los Angeles and Long Beach.
- **Control Strategy** – any strategy that reduces emissions of NO_x, SO_x, and PM_{2.5} and can include incentive-based programs.
- **Emissions Target** – Port related source emissions forecasted from the 2008 baseline emissions for the years 2014 and 2019 as shown in the Final 2012 AQMP.
- **Feasible Control Strategy** – for the purposes of this rule, a control strategy that the Ports have the authority to implement and is cost-effective. A cost-effective strategy is one that, for PM and NO_x emissions, meets the Carl Moyer Program cost-effectiveness limits as calculated using methodologies described in the most current version of the Carl Moyer Program guidelines. The Carl Moyer Program cost-effectiveness criteria and limits are appropriate for use in determining feasibility because they are well established and have defined acceptable cost-effectiveness requirements for emission reductions from mobile sources for well more than a decade. Currently, the Carol Moyer Program has a cost-effectiveness limit of \$17,460/ton of NO_x + 20*PM_{2.5}. For SO_x emissions, the cost-effectiveness limit of \$35,000 per ton of emission reductions is based on an analysis provided in the most recent amendments to the SO_x RECLAIM program.
- **PM_{2.5} Equivalent** – a scaling of NO_x, SO_x, and PM_{2.5} emissions based on their ability to form PM_{2.5} in the atmosphere. The scaling factors are developed using the same analytical tools and methods used in the 2012 AQMP and are further defined in Appendix V of the 2012 AQMP.
- **Port-Related Sources** – any mobile source that operates exclusively at the port or either begins or ends its trip at the port and includes ocean going vessels, locomotives, cargo handling equipment, heavy duty trucks, and commercial harbor craft that home port at one of the ports.
- **Reduction Target** – the percent reduction in PM_{2.5} Equivalents from the Ports' 2008 emissions and the emissions in the emissions target year. Analysis of the forecasted emissions of the emissions target year and the 2008 emissions shows that the reduction target is equivalent to 75%.

Subdivision (D) - Emissions Reporting Requirements

Currently the Ports develop annual emissions reports to track progress of their CAAP. These emissions reports are developed in coordination with the technical working group composed of representatives from POLA, POLB, U.S. EPA, CARB, and SCAQMD staff. As a result, the underlying activity information and emissions calculation methodologies have undergone extensive technical and administrative review. Paragraph (d)(2) requires the Ports to report emissions of NO_x, SO_x, and PM_{2.5} for the preceding calendar year from all port-related sources beginning on or before July 1, 2015 (for the 2014 emissions) and annually thereafter

by July 1st of each calendar year through 2020. Annual emissions are necessary to ensure that required emissions levels are maintained or to track progress (if additional reductions are required) toward achieving the required emissions levels. The SCAQMD will use the emissions reports as submitted without further review or approval.

In addition to annual emission reports, Paragraph (d)(1) would require earlier reporting of the 2014 emissions. Under the provisions of Paragraph (d)(1), the Ports, either jointly or separately, would report by November 1, 2014, the emissions of NO_x, SO_x, and PM_{2.5} from all port-related sources for calendar year 2014 based on actual activity information available prior to November 1st and projected activity information for the remainder of the calendar year. The rule requires earlier reporting [as compared to Paragraph (d)(2)] of the 2014 emissions to ensure that additional emission reductions (if needed) are implemented in time to ensure that the federal 24-hour PM_{2.5} ambient air quality standard 2014 attainment deadline is met and maintained.

Paragraph (d)(3) requires that emissions reported pursuant to paragraphs (d)(1) and (d)(2) be developed using the same emissions calculation methodologies used to prepare the emissions provided in the Final 2012 AQMP. This will maintain consistency between the AQMP and proposed rule reported emissions. However, Paragraph (d)(4) allows use of updated emission calculation methodologies if they are developed with input from the Ports' Emissions Inventory Technical Working Group which includes representatives from the District, CARB, the Ports, and the U.S. EPA, and requires that they be applied to the baseline emissions, emissions forecasts and actual emissions inventories after the new methodologies have been approved by all parties in the Technical Working Group. Emissions calculation methods are constantly improved and this paragraph allows for incorporation of these improvements with guidance and approval from the Emission Inventory Technical Working Group.

Subdivision (E) - Maintenance of Reduction Targets

As discussed earlier, the emission reduction targets are based on PM_{2.5} Equivalent emission reductions as forecasted using 2012 AQMP inventory methodologies. The PM_{2.5} Equivalent emission reduction target is forecast to be 75% from the 2008 Port inventory baseline for 2014 and 2019. Paragraph (e)(1) requires that within 30 days of submittal of the emissions reports required under paragraph (d)(1) or (d)(2), the Executive Officer shall inform the Ports whether or not they are required to submit an Emissions Reduction Plan or Revised Plan (should a Plan have already been prepared and disapproved). The Plan or Plan revision will be required if the reported PM_{2.5} Equivalent emissions will result in a less than 75% reduction from the baseline PM_{2.5} Equivalent emissions.

Paragraph (e)(2) requires the SCAQMD Executive Officer to review the reduction target based on the latest information available including future year emission estimates in the 2016 AQMP and by July 1, 2017 update, if necessary, the emission reduction target. Typically during the AQMP development process improvements to the emissions calculation methodologies are made and may affect the reduction target values. This paragraph ensures that the effect of these improvements on the reduction target values are assessed and incorporated into the proposed rule. In addition, a rule amendment reflecting the updated target and emissions would be developed through the normal rulemaking public process and proposed for consideration by the District Governing Board.

Subdivision (F) - Emission Reduction Plan Preparation, Approval and Implementation

If the backstop provisions of subdivision (f) are to be implemented because the emission reduction targets are not met, the Ports, upon notification by the Executive Officer that a Plan is required, shall submit an Emission Reduction Plan within 180 days to eliminate the emission reduction shortfall. The plan development time of 180 days is needed to ensure that there is sufficient time to incorporate the necessary public process and solicitation of strategies from interested stakeholders and the public. The Ports individually or in combination, shall prepare and submit to the District an Emission Reduction Plan to implement additional control strategies within 18 months of Plan approval that will reduce the emission shortfall. The 18 month implementation timeline ensures the focus is on strategies that can be quickly implemented.

Paragraph (f)(1) outlines the requirements for Plan preparation and submittal. The Ports shall initiate a process to identify sufficient feasible [as defined in paragraph (c)(5)] control strategies to eliminate the emission reduction shortfall and maintain the reduction target through calendar year 2020. Much of the sources of emissions at the Ports fall under the regulatory purview of U.S. EPA, CARB, and IMO and assistance may be needed from these agencies to accelerate or incentivize implementation schedules or supplemental regulations to obtain the additional emission reductions. To ensure consideration of additional strategies from the agencies, the Ports shall engage the California Air Resources Board, the District, and the U.S. Environmental Protection Agency to discuss the technical, economic, commercial, and legal issues associated with the potential strategies. In addition, to solicit public input on potential strategies, the Ports shall conduct at least one duly noticed public meeting before the Plan is presented to each respective Board of Harbor Commissioners for approval.

Each control strategy provided in the Plan shall include a description of the strategy including costs and cost effectiveness, the expected emission reductions, implementation method and schedule. If all identified feasible measures when implemented do not eliminate the shortfall, additional analysis is required, and must be included in the plan, to determine if other strategies not immediately implementable are available to garner emission reductions in the near future (e.g., technology expected to soon be commercially available). The implementation horizon for these additional strategies would be after the required 18 months but before 30 months. Additionally to ensure that all suggested strategies were considered, the Plan would need to include a list of all potential strategies not included in the Plan that were identified by the Ports, District, or public during the development process with an explanation of why each of the strategies will not be implemented.

The Plan will also include a process for submittal of progress reports with the methodology of how progress will be determined, along with the annual emissions reports detailing their progress toward eliminating the shortfall.

Paragraph (f)(2) requires the SCAQMD Executive Officer to review the Plan and notify the Ports in writing within 45 days of Plan submittal explaining whether the Plan meets the requirements of PR 4001 and if all or parts of the Plan are disapproved, and the reasons for disapproval. The Executive Officer as part of the review, will take into consideration the Ports' authority in implementing a control strategy, cost-effectiveness information provided

by the Ports, cost-effectiveness information from implementing similar strategies by other state and federal agencies, and the technical feasibility of implementing the control strategy within 18 months. The Executive Officer shall provide public notice of the action on the plan at the same time he notifies the Ports by mail and to all who have filed a written request for notification. The public has a 10-day period to appeal the decision pursuant to Rule 216. The Ports are required to implement those portions of a Plan that are approved and to submit a revised Plan within 60 days for those portions of the Plan that were not approved. The Ports may appeal the disapproval of the Plan to the District Hearing Board – an independent administrative law panel – and should the District Hearing Board uphold the disapproval, the Ports shall submit a revised Plan within 60 days of the District Hearing Board's decision. Within 45 days of receiving the revised plan, the Executive Officer shall approve or disapprove the revised plan or portions of the revised plan. The Ports shall implement the approved portions of the plan and will be in violation of the rule for the disapproved portions of the revised plan. The Ports may appeal the disapproval of the revised plan or portions thereof as discussed above.

Subdivision (G) - Variance and Appeal Process

The Ports may petition the District Hearing Board for a variance from any provision of the proposed rule or appeal a disapproved emission reduction plan.

IMPACT ASSESSMENT FOR PROPOSED RULE 4001

A technical analysis is being conducted to evaluate potential economic and environmental impacts of the proposed rule on the Ports. The impact analysis is based on potential actions the Ports may take should they be required to implement an Emission Reduction Plan.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

In accordance with the California Environmental Quality Act (CEQA) Guidelines §15252 and District Rule 110, the District is preparing a Draft Program Environmental Assessment (PEA) to analyze any potential adverse environmental impacts associated with PR4001. An NOP/IS was circulated for public review with a comment period from November 26, 2013 to January 16, 2014. Upon completion of the Draft PEA, the document will be released for public review and comment, and will be available at District Headquarters, by calling the District Public Information Center at (909) 396-2039, or by accessing the District's CEQA website at: www.aqmd.gov/ceqa.

SOCIOECONOMIC ASSESSMENT

Proposed Rule 4001 will result in additional costs to the Ports for emissions forecasting and reporting. In addition, there may also be additional costs to develop and implement control measures if the backstop provisions are required. Since the control strategies that may be implemented are not known, a detailed assessment cannot be made at this time. A socioeconomic analysis of the proposed rule will be made available at least 30 days prior to the public hearing.

DRAFT FINDINGS REQUIRED BY THE CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the District Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. The following provides a summary of the draft findings.

Necessity

The SCAQMD Board has found PR 4001 necessary to ensure that federal and state ambient air standards are achieved. Proposed Rule 4001 is included as an indirect source control strategy in the Final 2012 AQMP.

Authority

The District obtains its authority to adopt, amend, or repeal rules and regulations from California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40441, 40702, 40716, 40725 through 40728, 41508, and 42303.

Clarity

Proposed Rule 4001 is written so that its meaning can be easily understood by the persons directly affected by it.

Consistency

Proposed Rule 4001 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Reference

By adopting PR4001, the District Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40000 and 40001 (rules to achieve and maintain ambient air quality standards), 40440 and 40441 (rules to implement the AQMP).

REFERENCES

“Final 2012 Air Quality Management Plan,” South Coast Air Quality Management District, February 2013.

“Final Staff Report - Part 1 Proposed Amended Regulation XX- Costs & Cost Effectiveness Analysis”, SCAQMD, November 2, 2010.

“San Pedro Bay Ports Clean Air Action Plan,” Ports of Los Angeles and Long Beach, adopted 2010 (<http://www.cleanairactionplan.org/reports/documents.asp>).

APPENDIX A
PROPOSED RULE 4001

**PROPOSED RULE 4001 MAINTENANCE OF AQMP EMISSION REDUCTION
TARGETS AT COMMERCIAL MARINE PORTS**

(a) Purpose

The purpose of this rule is to establish actions to be taken in the event that emissions from port-related sources do not meet the emission targets assumed in the Final 2012 Air Quality Management Plan for the purpose of meeting the federal 24-hour PM_{2.5} standard in 2014 and maintenance of attainment in subsequent years.

(b) Applicability

This rule applies to commercial marine ports located in the South Coast Air Quality Management District (District), acting through their respective Boards of Harbor Commissioners. The Ports may comply jointly or separately with the provisions of this rule.

(c) Definitions

- (1) **BASELINE EMISSIONS** of NO_x, SO_x, or PM_{2.5} means emissions of NO_x, SO_x, or PM_{2.5}, as applicable, from all port-related sources, as calculated in the 2008 annual emissions provided by the Port of Los Angeles and the Port of Long Beach as shown in Appendix IV-A page IV-A-36 of the Final 2012 Air Quality Management Plan (AQMP) for the South Coast Air Basin.
- (2) **COMMERCIAL MARINE PORT (OR PORTS)** means the Port of Los Angeles and the Port of Long Beach.
- (3) **CONTROL STRATEGY** means a strategy that reduces NO_x, SO_x, or PM_{2.5} emissions and can include incentive-based programs.
- (4) **EMISSIONS TARGET** means the emissions forecast that is based on the Ports' 2008 baseline emissions forecasted for a specific future year as provided in Appendix IV-A page IV-A-36 of the Final 2012 AQMP.
- (5) **FEASIBLE CONTROL STRATEGY** means for the purpose of this rule, a control strategy that:
 - (A) The Ports have the legal authority to implement; and
 - (B) Has a cost-effectiveness that is less than or equal to:
 - (i) the applicable Carl Moyer Program cost-effectiveness for NO_x and PM combined; and

- (ii) \$35,000 per ton of SO_x.
 - (6) PM_{2.5} EQUIVALENT means the aggregate of the NO_x, SO_x, and PM_{2.5} emissions (tons/day) as defined by the following formula, as provided in the Final 2012 AQMP:
$$\text{PM}_{2.5} \text{ Equivalent} = 0.07 * \text{NO}_x + 0.53 * \text{SO}_x + 1.0 * \text{PM}_{2.5}$$
 - (7) PORT-RELATED SOURCES means on- and off-road mobile sources operating at, and to and from, the Ports, which includes ocean-going vessels, locomotives, heavy-duty trucks, harbor craft, and cargo handling equipment that emit NO_x, SO_x, or PM_{2.5}.
 - (8) REDUCTION TARGET means the percent reduction in PM_{2.5} Equivalent emissions measured between the baseline emissions and the emissions targets. For the purposes of this rule, the percent reduction in PM_{2.5} Equivalent emissions is 75 percent.
- (d) Emissions Reporting Requirements
- (1) For calendar year 2014, the Ports (either jointly or separately) shall submit to the Executive Officer by November 1, 2014, a report of the emissions for NO_x, SO_x, and PM_{2.5} from all port-related sources for the 2014 calendar year based on actual activity information available prior to November 1st for the calendar year and projected activity information for the remainder of the calendar year.
 - (2) Beginning on or before July 1, 2015 and each July 1st thereafter ending July 1, 2020, the Ports (either jointly or separately) shall submit to the Executive Officer a report of the actual emissions for NO_x, SO_x, and PM_{2.5} from all port-related sources for the preceding calendar year.
 - (A) If an Emissions Reduction Plan is required pursuant subdivision (f), the Ports shall report the progress in meeting the shortfall based on the process developed pursuant to subparagraph (f)(1)(D).
 - (3) For purposes of developing the reports pursuant to paragraphs (d)(1) or (d)(2), the Ports shall use the emissions calculation methodologies used to prepare the emissions inventories provided in the Final 2012 AQMP.
 - (4) Notwithstanding paragraph (d)(3), if newer emission calculation methodologies are developed based on input from the Ports Emissions Inventory Technical Working Group (which consists of Ports staff, District staff, California Air Resources Board, and the U.S. Environmental Protection Agency), the new emission calculation methodologies shall apply to the baseline emissions and the emissions prepared pursuant to paragraphs (d)(1) and (d)(2) once they are

approved by the District, California Air Resources Board, and U.S. Environmental Protection Agency.

(e) Maintenance of Reduction Targets

- (1) Within 30 days after the submittal of a report pursuant to paragraph (d)(1) or (d)(2), the Executive Officer shall inform the Ports that:
 - (A) The requirement to submit an Emission Reduction Plan (or a revised Emission Reduction Plan if a Plan has been prepared and approved) as specified in subdivision (f) shall not apply for the year covered by the report if the percent reduction in actual PM_{2.5} Equivalent emissions from the baseline emissions has met or exceeded the reduction target of 75 percent; or
 - (B) The Ports shall meet the provisions of subdivision (f) if the PM_{2.5} Equivalent emissions show that the percent reduction in PM_{2.5} Equivalent emissions from the baseline emissions is less than the reduction target of 75 percent.
- (2) On or before July 1, 2017, the Executive Officer shall review the reduction target based on the latest available information, which includes the future year emissions in the 2016 AQMP, and shall, if necessary to conform the reduction target to the AQMP, develop a proposed amendment to this rule for consideration by the District Governing Board which would revise the reduction target.

(f) Emission Reduction Plan Preparation, Approval, and Implementation

Upon notification pursuant to subparagraph (e)(1)(B), the Ports (either jointly or separately) shall prepare an Emission Reduction Plan (Plan) (or revise an existing Plan, if a Plan had been prepared to meet the reduction target in a previous year) and submit a Plan within 180 days to implement additional control strategies as soon as possible but no later than 18 months from the date of Plan approval in order to eliminate the emissions reduction shortfall from port-related sources.

(1) Plan Preparation and Submittal

- (A) The Plan shall, at a minimum, include sufficient feasible control strategies expected to eliminate the identified shortfall and maintain the reduction target through calendar year 2020.
 - (i) The Ports shall initiate a process for the identification of control strategies to eliminate the shortfall identified in subparagraph (e)(1)(B). As part of this process, the Ports shall engage the California Air Resources Board, U.S. Environmental Protection

Agency, and the District to discuss the nature of any reduction target shortfalls; legal jurisdiction and authority to implement potential strategies to address the shortfall; and cost-effectiveness and operational, technical, economic, and commercial feasibility of potential strategies.

- (B) If the identified shortfall cannot be eliminated despite implementation of all feasible control strategies within 18 months,
 - (i) The Ports shall show that the Plan includes:
 - (a) all feasible control strategies that can be implemented within 18 months; and
 - (b) all feasible control strategies that can be implemented beyond 18 months, but no later than 30 months.
 - (ii) The Plan submittal shall also include a list of all potential strategies not included in the Plan that were identified by the Ports, public agencies, or the public during the development of the Plan, and an explanation of why the strategies that were not included are not feasible, as defined in this rule.
 - (C) Each control strategy provided in the Plan shall at a minimum include the following elements:
 - (i) A description of the actions to be taken;
 - (ii) The expected emission reductions;
 - (iii) The cost and cost-effectiveness;
 - (iv) The method of implementation; and
 - (v) An implementation schedule.
 - (D) The Plan shall provide a process for submittal of progress reports detailing progress toward eliminating the emissions reduction shortfall pursuant to subparagraph (d)(2)(A).
 - (E) The Plan shall be approved by each respective (or jointly) Board of Harbor Commissioners at a duly-noticed public meeting.
 - (i) The Ports shall conduct at least one duly-noticed public meeting to solicit input and comments on the development of the Plan no later than 60 days prior to the Board of Harbor Commissioners' consideration of the Plan.
- (2) Plan Approval
- Within 45 days of receiving the Plan, the Executive Officer shall approve or disapprove the Plan.

- (A) The Executive Officer shall approve the Plan if the Ports have shown that the Plan complies with paragraph (f)(1).
 - (i) Upon Plan approval, the Ports shall implement the approved Plan.
- (B) The Executive Officer may disapprove the Plan in whole or in part, if the Plan does not comply with any provision provided in paragraph (f)(1).
 - (i) The Executive Officer shall provide in writing the reasons for the disapproval.
- (C) If the Plan is disapproved in whole or in part, the Ports (either jointly or separately) shall:
 - (i) Implement the control strategies in the approved portions of the Plan, if any; and
 - (ii) Within 60 days from the date of disapproval, submit a revised Plan or a revision to those portions of the disapproved Plan, or
 - (iii) If the disapproved Plan (or those portions of the Plan that were disapproved) is appealed to the District Hearing Board and the District Hearing Board upholds the District's disapproval of all or a portion of the Plan, submit a revised Plan or those portions thereof within 60 days after the District Hearing Board decision.
- (D) The Plan shall be subject to Rule 221 – Plans and the provisions of Regulation II.
- (E) The Executive Officer shall provide notice to the public of the action on the Plan.
 - (i) The notice shall be mailed at the time that the Executive Officer notifies the Ports of the decision or action.
 - (ii) The Executive Officer shall provide mailed notice of such decision or action to any person who has filed a written request for notification.
 - (iii) Requests for notice shall be filed pursuant to procedures established by the Executive Officer.
 - (iv) The 10-day period to appeal, specified in subdivision (b) of Rule 216, shall commence on the third day following mailing of the notice pursuant to this subdivision.
 - (v) The requirements for public notice pursuant to this section are fulfilled if the Executive Officer makes a good faith effort to follow procedures established pursuant to this section for giving notice and, in such circumstances, failure of any person to receive

the notice shall not affect the validity of any decision subsequently issued by the Executive Officer.

(F) If the Ports (either jointly or separately) submit a revised Plan (or revised portions of the disapproved Plan) pursuant to clause (f)(2)(C)(ii) or (f)(2)(C)(iii), the Executive Officer shall, within 45 days of receiving the Plan, approve or disapprove the revised Plan as described in this paragraph. If the revised Plan is disapproved, the Ports (either jointly or separately) shall:

- (i) implement the control strategies in the approved portions of the revised Plan, if any, and
- (ii) be in violation of this rule with respect to the disapproved portions of the revised Plan.

(g) Variance and Appeal Process

- (1) A Port, or both Ports jointly, may petition the District Hearing Board for a variance, pursuant to applicable laws and rules, from any provision of this Rule.
- (2) If an Emission Reduction Plan is prepared pursuant to subdivision (f) and is disapproved either in whole or in part, a Port, or both Ports jointly, may appeal to the District Hearing Board under Rule 216 – Appeals. If the District Hearing Board denies the appeal in whole or in part, the Ports shall comply with subparagraph (f)(2)(C) [or subparagraph (f)(2)(F)].

(h) Severability

If any provision of this rule is held by judicial order to be invalid, or invalid or inapplicable to any person or circumstance, such order shall not affect the validity of the remainder of this rule, or the validity or applicability of such provision to other persons or circumstances. In the event any of the exceptions to this rule is held by judicial order to be invalid, the persons or circumstances covered by the exception shall instead be required to comply with the remainder of this rule.