

**Summary of Existing and Upcoming Regulations Affecting
 Emissions from Port of Oakland Seaport Operations
 Sources of Diesel Particulate Matter (DPM) and Nitrogen Oxides (NOx)**

Document Overview: This document is intended to provide the Task Force a preliminary overview of the existing and pending regulations to reduce emissions from sources that operate at the Port of Oakland seaport. Information provided herein will be adjusted to reflect potential seaport growth and is intended to guide the Task Force in developing goals, objectives, and selection criteria.

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
<i>Ocean Going Vessels</i>					
Auxiliary engine low sulfur fuel rule	ARB	Requires low sulfur fuel for use with auxiliary engines. Effective 2007 within 24 nm of coast; marine fuel must be Marine Gas Oil or Marine Diesel Oil containing less than 0.5% sulfur (must be Marine Gas Oil containing less than 0.1 % sulfur starting in 2010)	Less than 10%	79%	In place – under litigation 2007 and 2010 phase-in period
Main engine low sulfur fuel rule	ARB	Brings main engine fuel requirements in line with auxiliary engine requirements	Less than 10%	83%	Potential rule under consideration for 2010 effective date
Cold ironing rule	ARB	Control hoteling emissions via one of several possible methods	90%	90%	Potential rule to be phased in 2010 – 2020
EPA Marine Diesel Engine Rule	EPA	Affects engines up to 30 liters per cylinder; relies on catalytic after-treatment technologies with less than 15 ppm sulfur fuel	Unknown	Unknown	Proposed rule Final rule expected by Dec. 2007 Would take effect as early as 2011
EPA large marine diesel engine rule	EPA	National emission standards for engines greater than 30 liters per cylinder (“category 3” marine diesel engines);	Unknown	Unknown	Proposed rule Final rule expected Dec. 2009
MARPOL Annex VI	International Maritime Organization (EPA lead)	International emission standards for engines greater than 30 liters per cylinder (“category 3” marine diesels)	Unknown	Unknown	Potential rule

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
MARPOL Annex VI 2000 NOx standard	International Maritime Organization (EPA lead)	International emission standards for marine diesel engines greater than 130 kW built on or after 2000.	0 – 10%	Small if any	Ship builders are complying; U.S. has not yet ratified treaty
MARPOL Annex VI	US Designated Sulfur Emissions Control Area	US application for a SOx Emission Control Areas (SECA). Sulfur levels capped at 1.5% or less potentially out 200 nm from shore as defined by Exclusive Economic Area (EEA)	Less than 10%	37% - 75%	US EPA preparing justification and other background materials
<i>Harbor Craft</i>					
EPA harbor craft engine standards	EPA	New engine standards for greater than 50 hp engines	30%	30%	In place Phase in 2004 – 2007
EPA proposed Tier 3 and Tier 4 engine standards	EPA	Tier 3 and Tier 4 engine standards	45% (based on combination of current and proposed standards) Tier 4 engines expected to achieve 90% reduction over uncontrolled engines	45% (based on combination of current and proposed standards) Tier 4 engines expected to achieve 90% reduction over uncontrolled engines	Proposed rule Phase in 2013 – 2016
ARB Harbor Craft low sulfur fuel rule	ARB	Requires Ultra-low Sulfur Diesel (ULSD) fuel use in harbor craft	0%	34%	In place Effective 2006
ARB In-Use Harbor Craft rule	ARB	Reduce PM and NOx from in-use and new commercial harbor craft	Unknown	Unknown	Proposed rule Possible 2010 – 2020 phase-in
<i>Cargo Handling Equipment</i>					
ARB Cargo Handling Equipment regulations	ARB	Retrofit or accelerated turnover to meet Best Available Control Technology (BACT) for newly purchased, leased or rented equipment (2007 or later on-road engine or Tier 4 off-road engine or cleanest verified PM/NOx retrofit)	90%	90+%	In place Effective 2007
EPA/ARB non-road diesel engine standards	EPA/ARB	Emission standards for new engines	Incorporated in above estimate	Incorporated in above estimate	In place Phase in 2008 – 2015

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
Ultra-low S fuel	ARB	Require less than 15 ppm sulfur diesel fuel	Incorporated in above estimate	Incorporated in above estimate	In place Effective June 2006
<i>On-road trucks: port trucks</i>					
ARB Port Truck Rule	ARB	Replace/retrofit trucks to meet emission standards	Unknown	Unknown	Proposed Goes to ARB board by late 2007
ARB Statewide Heavy-Duty (in-use) Truck Rule	ARB	Require private fleet operators to replace/retrofit diesel trucks greater than 14,000 GVWR to meet emission standards. Requirements applicable to port truck fleets would likely be superseded by the ARB Port Truck Rule	Unknown	Unknown	Potential rule Proposal scheduled for late 2007; full implementation by 2020 (2014 for PM emissions)
<i>On-road trucks: all</i>					
ARB on-road Heavy Duty Truck emission standards	ARB	New MY 2007 and later on-road Heavy Duty Trucks	40%	75 – 90%	In place 2007 – 2010 phase-in period
Ultra-Low Sulfur Fuel Rule	ARB	Require less than 15 ppm sulfur diesel fuel	0%	Enables use of PM emission reduction technologies	In place Effective June 2006
<i>Locomotives</i>					
EPA Tier 0 – Tier 2 locomotive rules	EPA	Emission standards for new and remanufactured engines	15%	25%	In place Tier 2 took effect 2005
EPA Tier 3 and 4 locomotive rule	EPA	Additional emission standards for new and remanufactured engines (based on use of 15 ppm sulfur fuel)	40% (based on combination of current and proposed standards) Tier 4 engines expected to achieve 90+% reduction over uncontrolled engines	55% (based on combination of current and proposed standards) Tier 4 engines expected to achieve 90+% reduction over uncontrolled engines	Proposed rule Expected to take effect as early as 2008 for retrofits of existing equipment and 2012 for new engine standards

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
ARB MOU Idle reduction	ARB (via Memorandum of Understanding [MOU] with Railroads)	Agreement to reduce idling at railroad yards and take other steps to reduce emissions	<5%	25%	Agreement adopted 2005
ARB intrastate locomotive low sulfur fuel rule	ARB	Requires use of off-road low (less than 15 ppm) sulfur fuel for engines used 90% in-state (mostly switcher engines)	0%	5%	In place Effective 2006
<i>All Port Sources</i>					
Green Ports Initiative	BAAQMD	Treat Bay Area seaports as indirect sources of air emissions, and regulate emissions from mobile sources using the BAAQMD's authority to regulate indirect sources (entities that are attract sources of pollution). Would set a seaport emission reduction goal and require each seaport to submit an Action Plan that would detail how seaport-related emissions will be reduced to achieve the goal.	Unknown	Unknown	Potential rule Formal proposal expected by March 2008

Notes

ARB: California Air Resources Board

EPA: United States Environmental Protection Agency

* As indicated in the column headings, the percentage emission reductions shown apply just to emissions from the source category and mode to which the Rule applies. For example, the cold ironing Rule emission reduction percentage estimate applies only to berthing emissions (e.g. reduce emissions while berthed by 90%), not to all ocean going vessel emissions. Emission reduction percentages shown are not additive from one Rule to another (several Rules have overlapping benefits).

Percentage reductions from 2005 emission levels expected to be achieved by 2020 (except as noted).

There is no growth assumption included in the calculations, i.e., they are based on zero growth between 2005 and 2020. The Port's maritime air quality plan will include future year emission estimates based on potential growth.

Key Milestones for MAQIP Technical Development

Document overview: This document is a more detailed summary of information provided at the April 10, 2007 kick-off meeting regarding key technical milestones for development of the MAQIP. This document is not intended to be a table of contents for the MAQIP or a comprehensive list of the topics that will be addressed in the MAQIP.

Milestone	Task Force Discussion	Task Force Final Comments
Set goals and objectives	June	June
Set procedures and criteria for screening and evaluating air quality control measures	June (& August as needed)	June
Review preliminary evaluation of expected reductions through existing and proposed regulation	June	June
Select planning horizon and pollutants	June or August	August
Develop Table of Contents	August	August
Develop list of air quality improvement measures to be screened for inclusion in plan	August	August
Define baseline & future Port activity/emissions	August & September	August
Develop introductory and background sections of plan	August & September	September
Review screening analysis results and 'short list' of measures to be analyzed and included in plan	September	September
Review results of quantitative analysis	November	November
Review prioritized list of measures	November	November
Develop implementation & monitoring plan	November & December	December
Obtain acknowledgements, graphics, etc. in advance of copy editing	November & December	December
Complete and review final plan	December	December
Port Board of Commissions approval	January 2008	

Notes

All dates are 2007, unless otherwise noted.

Technical materials to be supplied to Task Force Co-Chairs approximately 2 weeks before meetings and to Task Force approximately 1 week before meetings.

Guiding Principles, Screening & Evaluation Criteria, and Other Parameters

Document Overview: This document contains proposed draft goals, measure screening/evaluation criteria, and other parameters for development of the MAQIP. The information provided in this document is intended to serve as the basis for Task Force discussion at the June 11, 2007 meeting.

GUIDING PRINCIPLES FOR DEVELOPMENT OF THE MAQIP

Seek Economic Growth: The Port of Oakland is an economic engine for the City of Oakland and the region; as such, it is vital that the seaport strengthen and grow in a fiscally responsible manner. We recognize that our ability to operate, grow, and be a good neighbor will depend on our ability to address potentially adverse environmental impacts resulting from activities occurring at the seaport, at the same time remaining a viable and competitive organization.

Promote Environmental Stewardship: The Port of Oakland holds environmental stewardship as one of its core organizational goals. We are committed to assuring that seaport activities are carried out in an environmentally responsible manner, minimizing adverse impacts on our neighbors and the environment, and striving to improve the environmental conditions in the seaport area, for the benefit of both present and future generations.

Apply Concept of “Fair Share”: The Port of Oakland seaport commits to achieving its fair share of air emission reductions, while recognizing that it alone does not have the resources needed to subsidize the entire cost of emission reductions. Therefore, the seaport will count on the support of our private industry and government partners, and on the commitment of all companies engaged in goods movement at, to, and from the Port of Oakland, to achieve and fund their fair share of emission reductions in an equitable manner.

Exercise Authority: The Port of Oakland seaport commits to using its legal authority and influence to achieve air quality improvement within market and legal constraints. Seaport operations produce emissions, but the Port does not own or operate the sources that produce those emissions. Where the Port may not have authority over an emission source, the Port will strive to develop voluntary partnerships or agreements aimed at reducing emissions. The Port will pursue emission reduction measures in conjunction with and relying upon local, state, and federal regulations.

Engage Stakeholders: The Port of Oakland seaport commits to actively engage and partner with its diverse stakeholder community in developing, implementing, and monitoring the MAQIP. We recognize the need to especially collaborate and partner with those who are most affected by seaport operations, including, but not limited to labor, tenants, customers, and neighboring residents.

Promote Environmental Justice: The Port of Oakland seeks to prevent and address adverse impacts to communities that experience disproportionate environmental and economic effects.

Build Knowledge: The Port of Oakland believes that good planning builds knowledge and educates, and thus results in informed decisions. To this end, the Port strives to create a plan that educates and adds value and in which knowledge is built, shared, and used by all participants as a basis for informed and accountable decision-making. The Port and its stakeholders will rely on the best

available information, science, and technology in all aspects of maritime air quality planning. The Port and its stakeholders will remain flexible in their approaches to improving air quality, in order to respond to, adapt to, and incorporate new advancements, information, and evolving regulatory programs.

GOALS OF THE MAQIP

The MAQIP is a master planning document that achieves the following six proposed goals:

1. Define and discuss the geographic boundaries of seaport emission sources and the affected surrounding areas to which emission reduction efforts will be primarily targeted.
2. Define and discuss the pollutants that will be targeted through emission reductions, set forth quantitative emission reduction goals, and develop performance milestones.
3. Identify a 'menu' of candidate air emission reduction measures for seaport operations that would enable the Port to meet its emission reduction goals, building upon the regulatory and voluntary efforts of others to reduce emissions and to quantify health risk associated with certain types of emissions.
4. To the extent possible, develop quantitative estimates of benefits and costs associated with each candidate air emission reduction measure.
5. Set forth a framework for prioritizing, and prioritize, the implementation of emission reduction measures, recognizing that all the measures can not be implemented at once and that some measures may turn out to be infeasible.
6. Identify implementation, monitoring, and reporting strategies to track progress and to make adjustments to priorities, control measures, and implementation strategies, as necessary.

PARAMETERS OF THE MAQIP

The MAQIP is a comprehensive master planning document that provides a framework for the Port's commitment to reducing air emissions at the seaport.

- The ever-changing economic, regulatory, and technological context for the seaport operations may require that some measures be modified or replaced over time, or may render some measures less effective.
- The Port's maritime development plans may change over time in response to changing needs and financial constraints. Therefore, development projects discussed in the MAQIP may not be implemented.
- While the measures set forth in the MAQIP may have regional as well as local benefits, the primary focus of the MAQIP is the seaport (for emissions) and West Oakland (for impacts).
- The MAQIP sets forth measures that may be subject to review under the CEQA either independently or as part of development projects.
- If a law or regulation requiring that an air quality plan be filed with an oversight agency becomes effective, the Port will prepare such a document, which may be the MAQIP or an alternative document that meets the legal requirements set forth by the law or regulation.

SCREENING CRITERIA

Screening criteria will be used to determine which of the potential emission reduction measures ‘brainstormed’ by the Task Force and other stakeholders will be included in the MAQIP. The proposed screening criteria are provided below (in no particular order):

Criterion	Description
Duplication	Does the proposed measure achieve emission reductions not addressed through existing/proposed regulation or other initiative?
Health Benefits	Does the proposed measure provide significant health, ambient air quality, or other benefits?
Location	Does the primary benefit resulting from implementation of the proposed measure occur in the primary geographic area designated in the MAQIP?
Practicality	Can the proposed measure be implemented with existing or foreseeable technology and within a reasonable time frame?
Affordability	Is the proposed measure within the financial capability of the Port and/or stakeholders that will fund/implement the measure?
Acceptability	Is the proposed measure acceptable to various members of the stakeholder community?
Negative Side effects	Are there any negative environmental, economic, or social side effects resulting from implementation of the measure?

EVALUATION CRITERIA

Measures that 'pass' the screening process described above would be included in the MAQIP. Because these reduction measures will not be equally costly or beneficial, evaluation criteria are required to prioritize the measures for implementation. Recognizing that human health risk should be the primary driver for any emission reduction initiative, and that some source categories are more expensive than others to control, the framework allows for the evaluation of measures relative to one another, as well as relative to established standards. [It is expected that these criteria will be weighted or otherwise distinguished from one another in priority].

I. Air Toxics Health Risk Reduction

Based on the 2007 Human Health Risk Assessment prepared by CARB (Part I), consider:

- Which pollutant and emission source are primary contributors to human health risk?
- Does the proposed measure target a primary contributor?

II. Other Emission Reductions

- Does the proposed measure address emissions of other regulated pollutants, such as greenhouse gases?

III. Regulatory Context

- Is the source category and/or proposed measure already being addressed through regulation?
- Will the proposed measure, at a minimum, meet regulatory standards?
- Does the proposed measure present opportunities to exceed regulatory standards?

IV. Cost and Cost-Effectiveness

- What are the expected emission reductions?
- What is the cost of the expected emission reductions?
- What is the cost effectiveness of the proposed measure expressed in dollars per ton of emission reduction, as compared to available/established standards, for example Carl Moyer - \$14,300/ton (NO_x + ROG + 20PM)
- What is the relative cost effectiveness of proposed measure to other measures?

V. Implementability

- Is funding readily available?
- Is there a legal basis for implementation?
- What is the ease of implementation?
- Can emission reductions and implementation be tracked and verified?

VI. Acceptability

- Is the proposed measure acceptable to all stakeholders?
- Is the proposed measure acceptable to those stakeholders most affected financially, environmentally, and socially by the measure?
- Will the proposed measure result in undesirable side effects?

POLLUTANTS TO BE ADDRESSED [If time allows or for Task Force Meeting No. 2]

The MAQIP prioritizes its focus on the pollutants identified in the Port of Oakland's 2005 Maritime Air Emissions Inventory (in progress) and on concerns for human health. This prioritization may change over time. Consistency with the Emissions Inventory will enable the Port of Oakland to quantify the emission reductions achieved through implementation of the MAQIP. The proposed targeted pollutants are:

- Diesel Particulate Matter (DPM)
- Nitrogen Oxides (NO_x)
- Sulfur Oxides (SO_x)
- Reactive Organic Gases
- Carbon Monoxide (CO)

A qualitative discussion of greenhouse gas (GHG) emissions will be included in the MAQIP, but it will not be possible to quantify GHG emission reductions because GHG emissions are not included in the Port's 2005 Emissions Inventory. The Port expects that it will quantify GHG emissions in the future, as required by regulatory programs aimed specifically at this category of air emissions.

PLANNING HORIZON [If time allows or for Task Force Meeting No. 2]

Consistent with the regulatory context of the MAQIP, the MAQIP will serve as a master planning document through the year 2020. Focus will be applied to the first 5 years of that planning horizon (2008 through 2012) such that relatively more detail is provided about measures that may be implemented by 2012. The Port envisions the MAQIP to be a living document, which may be updated, modified, and amended as necessary over time to (a) address the results of implementation feedback, and (b) to reflect changes in the economic, regulatory, and technological context of the seaport operations. The MAQIP will be reviewed at five and ten-year intervals.