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
Ocean Going Vessels					
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)	5%	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	5%	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 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
MARPOL Annex VI 2000 NOx standard	International Maritime Organization (US Coast Guard lead)	International emission standards for marine diesel engines greater than 130 kW built on or after 2000.	0-20%	Small if any	Ship builders are complying; U.S. Senate has not yet ratified treaty

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
MARPOL Annex VI	US Designated Sulfur Emissions Control Area (EPA/ARB lead)	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
Harbor Craft					
EPA Commercial Marine Diesel Engine emission standards: Tier 1 & 2	EPA	New engine standards for Category 1 & 2 marine diesel engines	24%	12%	In place Phase in 2004 – 2007
EPA Marine Diesel Engine Rule: Tier 3 & 4	EPA	Affects engines up to 30 liters per cylinder; relies on catalytic after-treatment technologies with less than 15 ppm sulfur fuel. Tier 3	Tier 3: 50% Tier 4: 80%	Tier 3: 50% Tier 4: 90%	Proposed rule Final rule expected by Dec. 2007 Tier 3 phase in 2009-2012; Tier 4 phase in starts 2016/2017
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
Cargo Handling Equipment					
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
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

Rule	Agency	Rule Description	NOx Expected Reductions*	DPM Expected Reductions*	Status
On-road trucks: port trucks					
ARB Port Truck Rule	ARB	Replace/retrofit trucks to meet emission standards	40 – 50% Based on est. age distribution	90 – 95% Based on est. age distribution	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)
On-road trucks: all					
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
Locomotives					
EPA Tier 0 – Tier 2 locomotive rules	EPA	Emission standards for new and remanufactured engines (50% combined emissions reduction for NOx+PM+HC)	30% Based on est. age distribution	30% Based on est. age distribution	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

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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
All Port Sources					
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 <u>not</u> 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.