



The Gateway Cities Air Quality Action Plan

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TASK 2D: JUNE 2011 COMPENDIUM UPDATE

PREPARED FOR:

Los Angeles County Metropolitan Transportation Authority
(Metro)
Gateway Cities Council of Governments

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Introduction

This report describes the current status of the air quality measures listed in the March 2006 *Compendium of Existing and Proposed Near-Term Air Quality Improvement Strategies for the I-710 Corridor* (Compendium). The Compendium was prepared at a time of growing recognition of the air quality and associated health risk challenges facing the Interstate 710 (I-710) corridor communities. A number of stakeholder groups and public agencies were preparing recommendations for emissions reduction measures. The need to address emissions associated with goods movement was particularly urgent.

Since preparation of the Compendium, tremendous progress has taken place with respect to implementing emissions reduction measures. Numerous new emissions regulations, targeting trucks, locomotives, ships, harbor craft, and cargo handling equipment, have been adopted by the California Air Resources Board (ARB) and U.S. Environmental Protection Agency (EPA). The Ports of Los Angeles and Long Beach released the Clean Air Action Plan (CAAP) in November 2006 (updated in 2010). Guided by the CAAP, the ports have pursued a variety of emissions reduction projects. Other emissions reduction measures have been implemented by the Gateway Cities Council of Governments, the South Coast Air Quality Management District (SCAQMD), individual cities, the freight industry, and stakeholders.

Of the 154 measures listed in the original Compendium:

- 106 have been fully implemented.
- 31 have been partially implemented.
- 17 have not been implemented.

Despite these successes, air pollution remains a major problem in the I-710 corridor. Because of slow fleet turnover and the long phase-in period for new emissions standards, the full benefit of some adopted regulatory measures will not be felt for 10 years or more. Expected growth in vehicle travel, goods movement, and economic activity will partially offset some of the emissions rules and regulations. Other tasks of the Air Quality Action Plan will explore strategies to accelerate the air quality benefits of these measures.

To prepare this report, the ICF team reviewed numerous documents, including Internet materials, prepared by public agencies, industry groups, and other stakeholders. The team also conducted telephone interviews with the staff at the Port of Long Beach and the Port of Los Angeles.

Table 1 lists the 154 Compendium measures in their original order. The five columns to the right present the findings of the ICF team, including a description of the measure's status, whether or not the measure has been implemented, the sector or emissions source targeted by the measure, the responsible agency, and the relevant regulations (if applicable).

Table 2, beginning on page 51, summarizes the implementation status of the Compendium measures by sector (emissions source) and lists the measures that have not been implemented for each sector.

Table 3, beginning on page 53, is the original 2006 Compendium.

Next Steps

The next steps for the ICF team include:

- Identification of existing emissions control measures that could be accelerated or expanded through local government action and development policies and programs for I-710 corridor communities to implement those actions. (Task 6)
- Identification of new emissions reduction measures. (Task 7a)
- Evaluation of the emissions benefits and costs of the most promising emissions reduction measures. (Task 7b)

These tasks will serve as inputs to the air quality modeling and health risk assessment portion of the Air Quality Action Plan.

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Table 1: ICF Team Findings on Status of Compendium Measures

Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
Tier 2 Committee Recommendations on Health and Air Quality						
II	Establishing a baseline of current levels of pollution from each contributing source using the best available technology.	Pollution sources are documented under several different agencies and jurisdictions. Port-related emissions are documented in the annual Port of LA and LB Emission Inventories. Inventories of mobile sources along I710 corridor being developed under the I-710 EIR/EIS. Rail emissions along the Alameda Corridor have been estimated. Other regional trucking and rail emissions have been estimated by CARB, SCAG, and others. AQAP will also develop an emission inventory for the study area. Full implementation would require assembly of all disparate inventories for each locally contributing source and assuring best available technology. Ensuring a common baseline would also be useful.	Partially implemented	Various	Ports, ACTA, SCAQMD	

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Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
II	Identify the level of air quality impacts from increasing trucking, rail, and shipping.	Currently being developed under the Air Quality Action Plan (AQAP). Emissions projections available from certain sectors (e.g. POLA forecasts). Numerous additional studies have investigated impacts from these sectors, generally, including the MATES series, ARB Port and Rail HRA, EPA ECA research, EPA Cat 2 Engine Rule RIA, and others. Full implementation will require study completion and aggregation of disparate components into a single impact.	Partially implemented	Various	GCCOG, Metro	
II	Determine the approximate costs of health care that can be traced to the differential levels of air pollution to be encountered by corridor community members as a result of the construction effort, if it goes forward as envisioned.	Initiated but incomplete. The Air Quality Action Plan will include a PM2.5 morbidity and mortality analysis, which quantifies these impacts in monetary terms. The AQAP also includes a Community Medical Needs assessment, which will provide some input for this recommendation.	Partially implemented	Various	GCCOG, Metro	
II	Study the direct and indirect health and other economic costs on communities and the region caused by global trade and its associated pollution impacts.	Initiated but incomplete. Rail yard and Port HRAs specifically in the area have been conducted by ARB. Numerous studies have been performed on the health and economic impacts of goods movement globally (e.g. Corbett et al.). Further implementation of this measure will occur through the Air Quality Action Plan.	Partially implemented	Various	ARB, EPA, GCCOG, Metro	

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Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
I	Use enforcement, truck inspections, and incentives to control emissions.	Metro funded 2007 study to enhance truck inspection and enforcement; in Feb 2007 CARB implemented statewide drayage truck emissions certification and inspection regulations; CARB enforcement of state idle regulation.	Partially implemented	Truck	ARB, ports	
IV	Require air quality improvements in port operation as a condition of project approval.	Ports put compliance with Clean Air Action Plan (CAAP) measures into terms of new lease agreements, renewals, tariffs, and renegotiation during redevelopment; also use incentive programs, MOUs, and EIR operational mitigation measures. GCCOG is implementing a truck enforcement study as part of its ITS Implementation Plan for Goods Movement, to be completed in 2012.	Implemented and ongoing	Various	Ports, GCCOG	
II	Encourage the development and expansion of fleet modernization clean air programs.	Clean air programs are being driven by the Ports under the CAAP using leasing, fees, and other mechanisms. Funding comes from state (e.g., Carl Moyer), federal (e.g., DERA/NCDFAP), and local (AQMIP) sources. All sectors have been targeted according to jurisdictional responsibilities. GCCOG, with Caltrans and Metro, is starting to develop an implementation plan for green trucks in the freight corridor.	Implemented and ongoing	Various	Ports, ARB, EPA, SCAQMD, GCCOG, Metro	

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Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
II	Levy fees on containers to fund environmental improvements and community programs to address hidden costs attributable to goods movement impacts including: <ul style="list-style-type: none"> • Health care • Alternative fuels • Improvements/construction of I-710 infrastructure • Beautification of the corridor 	Container fees have been implemented under the CTP for drayage trucks not meeting 2007+ standard, meeting the CAAP goal of "target[ing] the source of pollution, not cargo in general." Also, the CAAP notes that "Fees collected should be used to clean up the source that generated the fee." Thus several sectors listed below are not directly addressed, although they may be funded otherwise, such as through the TAP, or be addressed indirectly through emission reductions.	Implemented and ongoing	Various	Ports, State legislation	
V	Develop infrastructure that quantifies emission reductions; i.e., permanent monitoring stations to measure emissions levels in the corridor	Emissions reductions quantified as part of recent 2010 CAAP update; real-time monitoring system at two ports with 5 year special study of air toxic components; no monitoring system developed along corridor; AQMD conducted study along I-710 Corridor (2010). Will be evaluated in the AQAP.	Partially implemented	Various	POLA, POLB, AQMD, Others	
V	Develop and implement improved air quality monitoring techniques.	Environ recently (2010) developed and implemented protocol for near-roadway modeling as part of AQ/HRA for the I-710 project; EPA has grant programs for innovative monitoring techniques.	Implemented	Various	Metro/ GCCOG	

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III	Make the use of alternative fuels a priority.	Various alternative fuels programs are being implemented at the Ports, including CNG, Propane, and various forms of electrification. Approx 900 LNG trucks now serve the ports. Due to NOx penalty, most biofuels have not been implemented. GCCOG, working with Calstart and Metro, has begun to evaluate alternatively fueled trucks that would use the freight corridor.	Partially implemented	Various	Ports, GCCOG, Metro	
III	Discourage the use of out-of-state fuel.	Other than line-haul locomotives, this is no longer a concern as national fuels are now largely harmonized with California standards. Rail fuels will be updated in 2012.	Implemented	Various	Ports, ARB	
III	All trucks, regardless of origin, must be subject to local, state, and federal standards.	EPA, ARB, and the ports have overlapping complimentary truck emission regulations. ARB instituted the international truck rule to apply all state regulations to foreign trucks driving within the state.	Implemented	Truck	EPA, ARB, POLA/POLB	EPA 2007 Truck Rule, ARB Truck & Bus Rule, Clean Truck Program
I	Require all trucks using the truck lanes on the I-710 to use alternative fuels as defined above, or pollution controls which achieve equal or better results.	To date, this has been infeasible. However, the I-710 EIR/EIS includes an alternative that assumes zero emission trucks using truck-only lanes. GCCOG, working with Calstart and Metro, has begun to evaluate alternatively fueled trucks that would use the freight corridor.	Not Implemented	Truck	Metro, Caltrans, GCCOG	

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IV, V	Require all railroad locomotives servicing two ports, or any rail yards connected with port container traffic, to use alternative fuels as defined above, or pollution controls that achieve equal or better results.	EPA and ARB have implemented several rail regulations: 2008 EPA rule will require new locos to meet Tier 3 standards beginning in 2012 and Tier 4 beginning in 2015; ARB MOU requires Tier 2 fleet average in SCAB; ARB & EPA fuel rules require LSD or ULSD for locomotives; ARB rail yard agreements require 85% PM reduction by 2020 (compared to 2005) at BNSF Hobart, UP Commerce, and UP ICTF/Delores rail yards.	Implemented	Rail	EPA, ARB	EPA Locomotives Engine Standards; ARB Tier 2 MOU; ARB rail yard agreement
V	Require the Alameda Corridor Transportation Authority to prepare a plan to electrify all locomotives involved in its operations.	SCAG considered the emissions benefits of railroad electrification as part of the 2008 RTP, and is currently re-visiting electrification as part of the Regional Goods Movement Plan study. Alameda Corridor was designed for eventual electrification, but ACTA has a 50-year agreement with BNSF and UP that requires approval of railroads to implement electrification; still faces major hurdles.	Not Implemented, but under study	Rail	ACTA, railroads, ports	
V	Retrofit schools, homes, and parks to increase protection from noise and pollution.	POLB has implemented a school retrofit grant program; POLA using air quality mitigation funds from China Shipping project for community health projects; ACTA committed to residential HVAC retrofits in SR-47 truck expressway project. Will be evaluated as part of AQAP.	Partially implemented and ongoing	Various	CARB, POLA, POLB	

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I	Identify location and develop facility for one-stop truck inspection.	Full implementation would require local inspections currently not implemented. However, CARB has developed statewide inspection and certification programs for drayage trucks. GCCOG is studying how to implement permanent truck enforcement facilities as part of its ITS Implementation Plan for Goods Movement, to be completed in 2012.	Partially implemented	Truck	SCAQMD, local governments, GCCOG, Metro	
V	Provide incentives for businesses to accept off-peak deliveries.	SCAQMD Air Quality Measure AQ2.3.4. SCAQMD giving points for off-peak deliveries; LA City and County policies implemented to encourage off-peak deliveries; also part of several additional City general plans. The PierPASS program has resulted in some shift of port truck trips to off-peak periods.	Implemented	Truck	SCAQMD, local governments, ports, ACTA	
I	Create programs to assist truck owners with engine/equipment upgrades and retrofits.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades. The ports Clean Truck Program provides funding for projects that include truck upgrades.	Implemented	Truck	Ports, AQMD, ARB	Port Clean Truck Program; ARB Carl Moyer Program

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I	Restrict port-generated traffic onto I-710 until improved fuels programs or other pollution emissions mitigation programs are implemented	Port Clean Trucks Program requires drayage trucks to meet environmental standards. The CTP accelerates the implementation of ARB's Drayage Truck rule. There are no other regulations that could be used for such a restriction.	Partially implemented	Truck	Ports	Port Clean Truck Program; ARB Drayage Truck Rule
V	Provide landscaping, specifically including tree planting, to improve air quality.	Mayor's million tree planting program; Tree People is implementing tree-planting program in Harbor area and accepts tree-planting proposals from cities; The City of Long Beach will implemented a tree planting program that will decrease the urban heat island effect on surrounding communities by providing developers with incentives to purchase and utilize additional trees in current and future development; various proposals in inland empire, Pasadena, along 710 freeway. The I-710 EIR/EIS will include a master plan to add highway planting (including trees) to the freeway. The I-5 project south of I-605 is adding 20,000 trees to the communities on both sides of the improvement during 2011-13.	Partially implemented	Various	Cities, Nonprofits, GCCOG, Metro, Caltrans	

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IV	Require ports to develop plans to electrify other terminal operations as a priority.	CARB shore power regulations - 50% of vessel calls must use shore power by 2014; POLB lease renewals resulted in electrification of container terminal and tanker terminal; CHE electrification facilitated by technology advancement program; POLA demonstration projects include new and retrofit electric rubber tired gantry cranes; zero emission drayage truck prototypes, dedicated fixed electric guide-way for trucks	Implemented	CHE	ARB, Ports	
IV	Require all rubber-tired gantry cranes to be electrified.	Initiated but not implemented. Both ports have programs to electrify RTGs (and RMGs). These are currently in development and addressing technical issues.	Partially implemented	CHE	Ports	
IV	Require all ships docking in the Ports of Los Angeles and Long Beach to shut down all diesel engines and use shore electric power.	ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed for cruise vessels and container ships.	Partially implemented	OGV	ARB, POLA, POLB	OGV At-Berth Engine Regulation
IV	Require the ports to expedite development of effective pollution controls for ships.	OGV emissions have been targeted with several programs: VSR (POLB and POLA), shore power (ports, ARB), clean fuels (ARB), NOx standards (EPA and IMO)	Implemented	OGV	ARB, POLA, POLB, EPA and IMO	OGV At-Berth Engine Reg; SPBP-OGV1 OGV VSR; EPA Cat 3 marine engine stds

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IV	Make mandatory the proposal of CARB to require that ships entering the coastal waters of California switch to low sulfur diesel fuel. Require the ports to provide financial subsidy if necessary to implement this requirement.	In July 2008 ARB mandated OGVs to use low sulfur fuels in main engines, auxiliary engines, and boilers when within 24 nautical miles of the California coastline. These standards require ship operators to switch from heavy fuel oil to low-sulfur marine distillate fuels. POLA/POLB provided incentives for early adoption of cleaner fuels in 2008-09.	Implemented	OGV	ARB, ports	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation
IV	Include trucks, trains and rail yards, marine vessels, and port equipment in clean air initiatives.	These sectors have been addressed by Port and Regulatory agencies, including the CAAP.	Implemented	Various		CAAP, Drayage Truck Rule, Truck & Bus Rule, Locomotive and Marine Rule, etc.
IV	Require all terminal equipment at the ports to operate on alternative fuel as defined by CARB. This includes Liquid Petroleum Gas, Compressed Natural Gas, or Liquid Natural Gas. As an alternative, require all engines to be equipped with pollution controls	Listed controls initiated but not implemented as requirements. Both ports have programs to implement alternative fuel CHE, including electricity, LNG, CNG, Propane, and hydrogen. These programs are in various stages of implementation, dependent on equipment type.	Partially implemented	CHE		

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V	Establish a fund that shippers must pay into, that provides rebates to those who adopt the use of clean air engines for vehicles. Ensure that this program accomplishes the goals of decreasing pollution rather than a pay-to-pollute program.	Superseded by the Port's Clean Truck Program, which used port tariffs to fund truck upgrades; in 2011 extended ban to Class 7 trucks as well and charge a fee to switch cargo to a banned truck	Partially implemented	Truck	Ports	
(COG) Clean Air Program						
I, II, IV	While replacing 373 trucks is significant, there are thousands of older port drayage trucks that could be replaced. Additional funding and incentives -- as well as a firm schedule -- would be needed to increase the rate of replacement.	ARB Drayage Truck Regulation sets emission standards for in-use drayage trucks. All trucks MY 1993 or older are prohibited as of 2010. By 2013 all in-use trucks must meet 2007 emission standards. POLB & POLA operate the Clean Truck Program that requires port drayage trucks to meet these emission standards more rapidly. ARB, AQMD, and ports provide a variety of grant funding to assist fleet owners in upgrading their vehicles.	Implemented	Truck	POLA / POLB, ARB	Drayage Truck Regulation, Clean Truck Program
(COG) Safety Action Initiative						
I	Tracking of trucks that are registered in the Gateway Cities clean air program to ensure that they stay in the region. All trucks modified by Gateway Cities since mid-2005 are being equipped with GPS tracking devices for this very purpose.	The Gateway Cities COG Fleet Modernization Program assisted in upgrading or replacing over 600 trucks. The program terminated in 2008. Most trucks received a GPS-based "Automatic Vehicle Locator" (AVL) device.	Implemented	Truck	Gateway Cities COG	

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I	Electronic screening of commercial vehicles that have good safety inspection records, allowing them to bypass roadside inspection and weigh facilities.	This exceeds current regulatory authority. AB 1009 allows CARB to inspect all HD commercial diesel vehicles with GVWR greater than 10,000 pounds for engine certification status and readable engine emission control label, but special screening currently is not implemented. As part of the GCCOG ITS Implementation Plan for Goods Movement (to be completed in 2012), a commercial vehicle enforcement network will be evaluated to address this recommendation. Note that U.S. DOTs "Trusted Truck" program is in a pilot phase and could address this.	Not Implemented, under study	Truck	CARB, Caltrans, GCCOG, Metro, CHP, U.S. DOT	

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II	Optimization of freeway routes leading to less congestion and improved air quality.	More than 10 projects involving highway improvements are planned or in progress: Projects are funded by FHWA, ports, MARAD. Projects include: SR47 Expressway (including Heim Bridge), Gerald Desmond Bridge Replacement, I-110/SR-47/Harbor Blvd Interchange, Navy/Seaside Ave Interchange/ Flyover, South Wilmington Grade Separation, and various I-110 Connectors Programs Projects (I-110/C Street Interchange, John S Gibson Intersection and I-110 ramp access improvements, SR-47 on and off-ramp improvements at Front St). The GCCOG ITS Implementation Plan for Goods Movement (to be completed in 2012) will identify projects to use technology to address this recommendation.	Implemented	Truck	Caltrans, Metro, Ports, GCCOG	

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Ports/ACTA Truck-Related Impact by Strategy						
V	Virtual Container Yard	The ports invested significant funds to try to develop a Virtual Container Yard (VCY) system. It was not accepted by the ocean carriers, who were reluctant to change their computer system and clerical procedures. In addition, there was reluctance by some truckers to hand off the equipment to another party because of per diem and insurance concerns. Thus, the strategy is no longer being pursued.	Not Implemented	Truck		
V	Extended Gate Hours	The POLA/POLB PierPass system reduces congestion and pollution from port drayage trucks. It combines a scheduling system with incentives for off peak shifts in order to reduce the congestion of peak hour movements.	Implemented	Truck	ACTA and PierPASS	PierPASS Program

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IV, V	Increased On-Dock Rail	At the Port of Long Beach, approximately 25% of containers currently use on-dock rail. PoLB has a goal of achieving 35% on-dock use for containers. On-going projects, when complete (Pier B, Pier G, and Middle Harbor) are expected to achieve 30% on-dock. The Port of Los Angeles hosts 4 on-dock rail yards for container cargo. Approximately 25% of containers currently use on-dock rail. The port has a goal of on-dock rail at every marine terminal by 2020, and a long-term goal of 35% on-dock use for containers.	Implemented	Rail		
IV, V	New Near-Dock Rail Yard	Under study but not yet implemented. BNSF has proposed to build the Southern California International Gateway (SCIG). UP has proposed to modernize the existing Intermodal Container Transfer Facility (ICTF). Both projects are currently in the environmental review process, with draft EIRs expected by Summer 2011.	Partially implemented	Rail		

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V	Shuttle Trains	SCAG considered this strategy as part of 2008 RTP. The concept would move cargo by rail to an inland port/logistics facility, but 2008 Inland Port Feasibility Study completed for SCAG found that while concept could reduce net truck VMT and lower net emissions, it would require operating subsidies and significant capital investment.	Not implemented	Rail		
V	SR-47 Viaduct	HRA results for project indicated substantial regional benefits associated with moving trucks more efficiently through dedicated expressway; localized impacts are mitigated by HVAC retrofits. The viaduct (a four-lane elevated freeway) was considered as one alternative in the SR-47 project. However it was ultimately rejected in favor of the preferred alternative of keeping the trucks on the arterial.	Partially implemented and ongoing	Truck	ACTA, Caltrans	
Port of Long Beach Green Port Policy						
IV	Vessel Speed Reduction (Green Flag Program) - voluntary, incentivised program requiring ships to slow to 12 knots at a distance of 20 miles from Point Fermin.	POLA and POLB implemented a voluntary VSR. Vessels get a reduction on dockage fees: 15% if they VSR from 20nm, 25% from 40nm. Currently 98% participation from 20nm, 85% participation from 40nm.	Implemented	OGV	Ports of LA and LB	SPBP-OGV1 OGV Vessel Speed Reduction (VSR)

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IV	Shore Power - the Port has committed to a goal of providing shore power to all new and existing container terminals; The Port's ultimate goal is to have 100% of vessels at container terminals plug in once the infrastructure has been retrofitted.	ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed two berths at two terminals: one container and one liquid bulk at the Port of Long Beach.	Partially implemented	OGV	ARB, POLA, POLB.	OGV At-Berth Engine Regulation
IV	Retrofit/Re-power Requirements for Infrequent Callers - Port lease language will require the use of exhaust controls or clean fuels in the auxiliary engines of vessels that do not use shore power.	Infrequent callers are not required to make use of shore power infrastructure or clean fuels. The ARB Marine Fuels Rule includes a "noncompliance fee" option in which infrequent callers can pay a fee starting at \$50k to waive fuel sulfur rules. Ports have explored "socks for stacks" that would capture emissions from infrequent callers while at berth.	Not Implemented	OGV	POLA / POLB	
IV	Main Engine Fuel Improvement - the Port is considering incentives as part of the Green Flag Program for the use of low-sulfur (initially 1.5%) diesel or equivalent.	In 2008 ARB adopted low sulfur diesel requirements within 24nm. POLA/POLB provided incentives for early adoption of cleaner fuels in 2008-09.	Implemented	OGV	POLA/POLB	
IV	Auxiliary Engine Fuel Improvement - lease language will require the use of fuel with 0.2% or lower sulfur content or equivalent, or exhaust gas treatment, in auxiliary engines while ships are at berth.	Superseded by regulations. At berth emissions addressed by ARB low-sulfur fuel regulation for auxiliary engines and shore power regulation for at-berth ships.	Implemented	OGV	ARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation

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IV	Vessel Smoke Stack Emission Reduction - POLB Security will continue to issue warnings and citations to vessels in order to eliminate excess smoke and reduce vessels emissions while at berth.	Smokestack program is enforced by the harbor patrol.	Implemented	OGV	POLB	
IV	West Coast Sulfur Emission Control Area (SECA) - in January 2005, the Long Beach Board of Harbor Commissioners adopted a resolution urging the United States to ratify Annex VI of the International Convention for the Prevention of Marine Pollution From Ships.	In March 2010 IMO issued the North American ECA. The fuel requirements in the ECA are consistent with EPA regulations on US-flagged vessels and ARB regulations on vessels in coastal waters.	Implemented	OGV	IMO	IMO North American Emissions Control Area (ECA)
IV	The Port will replace or re-power, or convert to cleaner fuels, survey boats and other Port-owned harbor craft.	ARB's harbor craft rule and marine fuels rule updated standards for harbor craft. Additionally, the TAP program at the Ports have tested alternative powered H/C, including hybrids	Implemented	HC	Ports of LA and LB	SPBP-HC1 Performance Standards for Harbor Craft
IV	Yard Tractor Modernization & Alternative Diesel Fuel Programs - lease language will commit tenants to meet contemporary CARB and EPA emission standards in new equipment, use clean fuels in existing equipment, and retire older equipment.	CAAP Measure CHE1 (Performance Standards for CHE) is designed to achieve the maximum possible emission reductions from cargo handling equipment operating at the port over the next several years by accelerating CARB's CHE regulation	Implemented	CHE	Ports of LA and LB	SPBP-CHE1 Performance Standards for Cargo Handling Equipment, CTP, CAAP CHE1

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IV	Enhanced Cargo Handling Modernization - lease language will require accelerated replacement of terminal equipment with equipment meeting future off-road standards for diesel engines.	CAAP Measure CHE1 (Performance Standards for CHE) is designed to achieve the maximum possible emission reductions from cargo handling equipment operating at the port over the next several years by accelerating CARB's CHE regulation	Implemented	CHE	Ports of LA and LB	SPBP-CHE1 Performance Standards for Cargo Handling Equipment, CTP, CAAP CHE1
IV	Diesel Emissions Reduction Program - container terminal cargo handling equipment has been converted to exhaust controls and clean diesel fuel.	CAAP Measure CHE1 (Performance Standards for CHE) is designed to achieve the maximum possible emission reductions from cargo handling equipment operating at the port over the next several years by accelerating CARB's CHE regulation	Implemented	CHE	Ports of LA and LB	SPBP-CHE1 Performance Standards for Cargo Handling Equipment, CTP, CAAP CHE1
IV	Port of Long Beach Green Port Policy	POLB Harbor Commission adopted a Green Port Policy in 2005 that guides all port operations and future development to achieve significant air quality improvements. Key elements of the Green Port Policy that are being enacted over time are the port's commitment to implement shore power; the encouragement of terminal operators to electrify yard equipment; and the conversion to electric dredging for all port deepening projects.	Implemented	Various	Port of LB	POLB Green Port Policy

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IV	PHL Switcher Locomotive Modernization & Emulsified Diesel Program - PHL rail locomotives are being replaced in 2007; use idle limiting devices; test DOCs.	As of 2011 PHL operates a fleet of 22 Tier 2 switchers. By 2012 16 switchers will be upgraded to Tier 3+. A test program was created in 2005 for emulsified diesel and DOCs. However, neither produced ongoing benefits. The PuriNox emulsified diesel is no longer available. Tests have shown implementation challenges for DOC retrofits.	Partially implemented	Rail	POLA, POLB, PHL.	SPBP-RL1 PHL Rail Switch Engine Modernization
IV	Ultra-Low Emission Switcher Locomotives - requires PHL to deploy Green Goat and LNG switchers.	All PHL locomotives currently Tier 2, agreement in progress to upgrade 2/3 of the fleet to Tier 3 in 2012. PHL tested an LNG and BEV locomotive.	Implemented	Rail	POLA and POLB	SPBP-RL1 PHL Rail Switch Engine Modernization
IV	Idling Controls on Switcher & Line Haul Locomotives - install controls on PHL equipment; Ports cannot install equipment on Class 1 line haul locomotives.	2008 EPA rulemaking requires that new and remanufactured locomotives be equipped with idle reduction technology.	Implemented	Rail	EPA	EPA Locomotives Engine Standards

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IV	ARB Diesel Fuel for Class 1 Locomotives - support of this measure would be part of the Green Port legislative agenda.	In 2004, ARB approved requirements for fuel used in intrastate locomotives that accelerate the implementation of EPA's ULSD requirements. Beginning 2007, diesel fuel sold for use in intrastate locomotives operating in CA was required to meet the specifications of CARB diesel fuel (15 ppm sulfur). Regulation does not apply to locomotives entering CA in interstate service. However, EPA regs for interstate locomotives go into effect in 2012.	Implemented	Rail	ARB	Requirements for Intrastate Locomotive Fuel Use
I, IV	Gateway Cities Truck Modernization - subsidies are being considered by POLB to commercial truck owners that trade in their diesel trucks with older engines for models with newer, cleaner-burning engines.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades. The POLA / POLB Clean Truck Program provides funding for projects that include truck upgrades.	Implemented	Truck	POLA / POLB, AQMD, ARB	Port Clean Truck Program; ARB Carl Moyer Program

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I, IV	Retrofit Heavy-Duty Diesel Vehicles with Diesel Oxidation Catalysts (DOCs) or Diesel Particulate Filters (DPFs) - for future container terminal projects, the Port will require installation of exhaust controls on older trucks serving the terminal	Port Clean Trucks Program requires drayage trucks to meet environmental standards. The CTP accelerates the implementation of CARB truck & bus rule. Funded projects include after treatment technology retrofits.	Implemented	Truck	POLA / POLB	Port Clean Truck Program
V	Truck Idling Reduction Measures - the Port will require truck idling limits for on-road trucks within Port boundaries.	The PierPASS program and other gate improvements reduce truck idling by minimizing congestion at port gates. ARB regulations limit idling of all trucks to 5 minutes. Additional requirements for truck APUs. Strict limits on school buses.	Implemented	Truck	ARB, POLA, POLB	School Bus Idle Reduction Program, Heavy-Duty Vehicle Idling Emission Reduction Program; PierPASS
IV	Petroleum Coke Dust Control - the Port will continue to implement the Rule 1158 program aimed at reducing fugitive dust from petroleum coke operations.	Rule 1158 is still in effect and was modified in 2008 to provide clarification on applicability and requirements; POLB are still actively enforcing these requirements through lease agreements; POLA has no petroleum coke tenants	Implemented	Other	AQMD, POLB	

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IV	Electric Dredging - additional electrical receptacles will be placed around the Port to facilitate the switch to electric dredging; beginning in 2008, the Port will require all non-maintenance dredging to be conducted with electric equipment.	Port programs still mandate use of electric dredges; also use electric dredges for maintenance dredging, where feasible.	Implemented	HC	Ports of LA and LB	
IV	Port Ride Share Program - the SCAQMD, under Rule 2202, requires employers of 250 or more employees to establish rideshare programs; the City of Long Beach developed a program in response to this requirement and the Port participated in the program.	Both Ports of LA and LB have employee rideshare programs in effect; buy hybrid vehicles where possible to reduce emissions; also utilize alt fuels in maintenance equipment where feasible	Implemented	Other	Ports of LA and LB	
Port of Los Angeles Clean Air Program						
IV	Vessel Speed Reduction - A voluntary program under which vessels are slowed within an agreed-upon distance from the port, reducing emissions of NOx.	POLA and POLB implemented a voluntary VSR. Vessels get a reduction on dockage fees: 15% if they VSR from 20nm, 25% from 40nm. 98% participation from 20nm, 85% participation from 40nm.	Implemented	OGV	Ports of LA and LB	SPBP-OGV1 OGV Vessel Speed Reduction (VSR)
IV	Alternative Maritime Power - a program for ships to use shore power instead of fuel-burning auxiliary engines while at berth (also known as cold-ironing).	ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed for cruise vessels and container ships.	Implemented	OGV	ARB, POLA, POLB.	OGV At-Berth Engine Regulation

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IV	Auxiliary Engine Fuel Improvement Program - a program to encourage or require the use of progressively lower sulfur fuel (i.e., marine diesel oil) in auxiliary engines of ocean-going vessels as they approach the port.	In July 2008 ARB mandated OGVs to use cleaner burning fuels in main engines, auxiliary engines, and boilers when within 24 nautical miles of the California coastline. These standards require ship operators to switch from heavy fuel oil to low-sulfur marine distillate fuels.	Implemented	OGV	ARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation
IV	Main Engine Fuel Improvement Program - a program to encourage or require the use of lower sulfur fuel in main engines of ocean-going vessels as they approach the port. This measure may be superseded by the implementation of a Sulfur Emission Control Area	In July 2008 ARB mandated OGVs to use cleaner burning fuels in main engines, auxiliary engines, and boilers when within 24 nautical miles of the California coastline. These standards require ship operators to switch from heavy fuel oil to low-sulfur marine distillate fuels.	Implemented	OGV	ARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation
IV	Low Emission Main Engines - a program to encourage the development and use of low emission main propulsion engines (i.e., Blue-Sky series/Category 3 engines) for marine vessels calling at the port.	EPA's 2009 Category 3 Marine Engine rule set upcoming Tier standards for marine engine emissions. These standards are consistent with IMO international engine standards. The Tier 2 standards became effective in 2011, and Tier 3 standards become effective in 2016. To date, no ship manufacturers have produced Tier 3 engines in advance of the implementation date.	Implemented	OGV	EPA	Category 3 Marine Engine Standards

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IV	Reroute cleanest ships - a program to encourage or require ship operators to use their newest/lowest emitting vessels calling at the port.	Several clean air plans have suggested that clean vessels be dedicated to California service; however this requirement is not practical due to shipping patterns. Ships typically travel to several ports in succession, moving along the west coast.	Not Implemented	OGV	None	
IV	Biofuels for Harbor Craft - a program to encourage or require the use of biofuels in harbor craft operating in Los Angeles Harbor.	Port of LA has reportedly reached an agreement with APT to supply emulsified biodiesel to the Port, but research does not show any implementation of a biofuel program and discussions with the port indicate that the NOx penalty may prevent use of biodiesel in South Coast Air Basin.	Not Implemented	HC	POLA	

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IV	China Shipping Settlement Air Quality Mitigation Measures for Harbor Craft - Existing measures recommended by the Technical Advisory Committee (TAC) and implemented by the port, including repowering/retrofitting harbor craft main and auxiliary engines.	The China Shipping settlement agreed to in 2003 and amended in 2004 included a series of environmental programs, including the Harbor Department's commitment for \$29 million over five years to pay for DPM and NOx emissions mitigation from port operations. This program is known as the Air Quality Mitigation Incentive Program (AQMIP). A wide range of projects were awarded funding on a variety of port equipment from this program, including repowers, retrofits, after-market technologies and new engine purchases for marine engines and equipment on tugs and harbor craft.	Implemented	HC	Port of LA	China Shipping Settlement, AQMIP
IV	Alternative-Fuel Equipment - a program to replace existing diesel-fueled cargo handling equipment with equipment powered by alternative fuels or electricity.	Both ports have programs to implement alternative fuel CHE, including electricity, LNG, CNG, Propane, and hydrogen. These programs are in various stages of implementation, dependent on equipment and fuel type.	Implemented	CHE	SPBP-CHE1 Performance Standards for Cargo Handling Equipment	Ports of LA and LB

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IV	China Shipping Air Quality Mitigation Measures for Cargo Handling Equipment - Existing measures recommended by the Technical Advisory Committee (TAC) and implemented by the port, including replacing cargo handling equipment with low emission alternatives.	The China Shipping settlement agreed to in 2003 and amended in 2004 included a series of environmental programs, including the Harbor Department's commitment for \$29 million over five years to pay for DPM and NOx emissions mitigation from port operations. This program is known as the Air Quality Mitigation Incentive Program (AQMIP). A wide range of projects were awarded funding on a variety of port equipment from this program, including repowers, retrofits, after-market technologies and new engine purchases for CHE.	Implemented	CHE	Port of LA	China Shipping Settlement, AQMIP
IV	Alternative Fuel Infrastructure for Cargo Handling Equipment - Installation of liquefied natural gas (LNG) refueling terminal within the port to support the use of LNG-powered cargo handling equipment.	No on-site LNG stations have been installed at ports. Several truck LNG stations have been located near port property. Terminal operators such as Yusen Terminals have been using LNG yard tractors, but have been supplying the fuel privately. Private fuel arrangements have been preferred over port facility for off-road vehicles.	Not Implemented	CHE	Ports of Los Angeles & Long Beach, terminal operators	

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IV	Pacific Harbor Line (PHL) Modernization - a voluntary program initiated by the port (in conjunction with the PHL and the Port of Long Beach) to modernize PHL switcher locomotives and initiate the use of ultra-low sulfur diesel (ULSD) fuel.	All PHL locomotives currently Tier 2, agreement in progress to upgrade 2/3 of the fleet to Tier 3 in 2012. Partially funded by AQMD / Carl Moyer. All intrastate CA locomotives required to use ULSD per CARB regulation.	Implemented	Rail	Ports of LA and LB	SPBP-RL1 PHL Rail Switch Engine Modernization
IV	Idling Controls for Switcher and Line Haul Locomotives - a program to encourage or require the installation of idling controls on switcher and line haul locomotives operating in the port. Idling controls automatically shut off engines after pre-set length	2008 EPA rulemaking requires that new and remanufactured locomotives be equipped with idle reduction technology.	Implemented	Rail	EPA	EPA Locomotives Engine Standards
V	Electrification of Alameda Corridor and Alameda Corridor East - a measure to encourage and facilitate the conversion of the Alameda Corridor and related rail infrastructure from diesel power to electric.	SCAG considered the emissions benefits of railroad electrification as part of the 2008 RTP, and is currently re-visiting electrification as part of the Regional Goods Movement Plan study. The Alameda Corridor was designed for eventual electrification, but ACTA has 50 year agreement with BNSF and UP that requires approval of railroads to implement electrification; still faces major hurdles.	Not Implemented	Rail	Railroads	

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IV	Locomotive Technology Replacements - a measure to research and encourage the development of low emission alternatives to diesel locomotive power, including magnetic levitation, alternative fuels, fuel cells, and fueled/electric hybrids.	ARB and ports have researched advanced technology for future rail emission reductions (http://www.arb.ca.gov/railyard/ted/083109tedr.pdf). POLB/POLA is seeking proposals for a Zero-Emission Container Movement System (ZECMS). Full implementation would require a unified program on low emission alternatives. ARB rail yard agreement requires UP and BNSF to assist in study of low emission technologies.	Partially implemented	Rail	ARB	
IV	On-Road Heavy Duty Truck Alternative Fuels Program - a program to encourage and facilitate replacement of diesel trucks with alternative fueled trucks (i.e., LNG and hydrogen). The primary mechanisms will be through the existing Gateway Cities truck mode	Starting in 2009 POLA is funding an Alternative Fuel Truck Incentive Program, offering grants of \$80k for LNG, CNG, EV trucks. Approximately 900 LNG trucks currently serving the ports. Full implementation would require a unified program on truck alternative fuels. GCCOG, working with Calstart and Metro, is beginning to develop an implementation plan to use green trucks in the proposed I-710 freight corridor.	Partially implemented	Truck	Ports of LA and LB, GCCOG, Metro	Port Clean Truck Program, I-710 freight corridor project

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IV	Alternative Fuel Infrastructure for Heavy Duty Vehicles (HDVs) - installation of LNG refueling stations within the port and greater Los Angeles area to support the use of LNG-powered on-road trucks. In addition, installation of a hydrogen fueling station to support hydrogen fuel cell vehicles.	No on-site LNG stations have been installed at ports. As of June 2010 there are 2 LNG station adjacent to ports serving class 8 trucks. As of Apr 2011, no H2 stations on or near port property. GCCOG, working with Calstart and Metro, is beginning to develop implementation plan to use green trucks in proposed I-710 freight corridor.	Implemented	Truck	Ports of LA and LB, GCCOG, Metro	SPBP-HDV2 Alternative Fuel Infrastructure for Heavy-Duty Nat. Gas
Natural Resources Defense Council (NRDC) and the Coalition for Clean Air (CCA) Recommendations to Ports						
IV	Clean up harbor craft, such as tugboats, through engine repower and retrofit programs.	There are no port grant programs specifically targeting harbor craft. However, this measure is partially met by other programs. Harbor craft upgrades may be eligible for Carl Moyer financing, standard compliance is mandated under the ARB's Commercial Harbor Craft Rule, and the China Shipping Settlement Measures also address some H/C retrofits and repowers.	Not Implemented	HC	Ports of LA and LB; SCAQMD, ARB	SPBP-HC1 Performance Standards for Harbor Craft
IV	Limit idling of oceangoing vessels and tugboats by providing electric power at docks and requiring ships and tugboats to "plug in" to shore-side power while at berth.	ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed for cruise vessels and container ships. Full implementation will require similar measure for harbor craft.	Partially implemented	OGV	CARB	OGV At-Berth Engine Regulation

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IV	Require ships, including oceangoing vessels, to use the cleanest grade of diesel fuel possible, with a sulfur content of 15 to 2,000 parts per million.	Enacted but not yet implemented. ARB 2008 regulations require clean diesel for marine vessels within 24 miles of CA coastline. Starting in Jan 2012 ships must use 1000ppm sulfur fuel.	Partially implemented	OGV	CARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation
IV	Where possible, create incentives for, or otherwise promote the use of, emission controls on oceangoing vessels.	Several measures in the CAAP propose incentives for OGV upgrades and accelerated adoption of clean fuel standards. The Low-Sulfur Vessel Main Engine Fuel Incentive Program encouraged vessels to adopt cleaner fuel before the 2009 regulation phase-in. The program reimbursed shippers for the cost differential.	Implemented	OGV	POLB/POLA	Low-Sulfur Vessel Main Engine Fuel Incentive Program
IV	Retire equipment that is ten or more years old and replace it with the cleanest available equipment and fuel choices, preferably alternative fuels.	POLB implemented a voluntary program to modernize or retrofit CHE. Achieved 100% participation from terminals. Funding provided by EPA Diesel Emission Reduction Program.	Implemented	CHE	POLB, EPA	Diesel Emission Reduction Program
IV	Retrofit existing equipment less than ten years old to run on the best available control technology, including diesel particulate filters (DPFs) with lean NOx catalysts (LNCs) and, if not feasible, with diesel oxidation catalysts (DOCs).	CAAP Measure CHE1 (Performance Standards for CHE) accelerates CARB's CHE regulation by setting purchase requirements for new engines or retrofit of existing engines with the cleanest available diesel emission control system.	Implemented	CHE	POLA/POLB	

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IV	Switch to cleaner diesel fuels, such as low-sulfur fuel with sulfur content less than 15 parts per million and diesel emulsions.	<p><u>OGV</u>: On July 24, 2008, CARB adopted low sulfur fuel requirements for main, auxiliary engines and auxiliary boilers within 24 nm of the California coastline. This requires use of MGO with < 15000 ppm or MDO with < 5000 ppm S by July 2009 and MGO or MDO with < 1000 ppm by 2012.</p> <p><u>H/C</u>: In 2004, CARB adopted a low sulfur fuel requirement of 15 ppm for harbor craft starting January 1, 2006 (in SoCAB) harbor craft.</p> <p><u>Rail</u>: Starting January 1, 2006 statewide, intrastate locomotives are required to use CARB off-road diesel fuel with sulfur < 15 ppm. However interstate locomotives are not subject to this standard until 2012.</p> <p><u>CHE</u>: In 2004, CARB approved an amendment harmonizing off-road diesel with EPA's Tier 4 regulation. The Highway and Non-highway Diesel Fuel rule requires the ULSD at 15 ppm for nonhwy applications starting in June 2006. (EPA requires ULSD for CHE nationwide starting in 2010.)</p> <p>No verified diesel emulsions are currently available.</p>	Implemented	Various		ARB OGV Main and Auxiliary Engine Low-Sulfur Fuel Rule; ARB Loco. Diesel Fuel Rule; ARB Hwy and Non-highway Diesel Fuel Rules

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IV	Repower or replace all switching locomotives that do not meet the Environmental Protection Agency (EPA) Tier 0 Standards with electric-hybrid or alternative-fuel engines.	There are 10 electric hybrid (Green Goat) and 4 LNG switchers operating in SCAB. However, the industry has shown preference for GenSet switchers powered by nonroad engines.	Partially Implemented	Rail	SCAG, AQMD, ports	
IV	Install engine emissions controls where possible.	This measure has been addressed through numerous programs and rules, including: CAAP CHE1, CARB CHE Rule, and CARB Commercial H/C Rule	Implemented	Various		
IV	Require automatic engine shutoff controls to minimize unnecessary idling.	2008 EPA rulemaking requires that new and remanufactured locomotives be equipped with idle reduction technology.	Implemented	Rail	EPA	Locomotives Engine Standards
IV	Commit to using cleaner fuels, such as on-road grade diesel.	The EPA Clean Air Nonroad Diesel Rule (2004) required ULSD (15ppm) for CHE in 2010. In 2012 ULSD is required for locomotives and marine nationwide. ARB has required in-state locomotives to use ULSD since 2007. (Also see NRDC/CCA Recommendation IV: "Switch to cleaner diesel fuels..." above.)	Implemented	Various		

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IV	Create incentive programs that encourage fleet modernization, the retirement of older trucks, and their replacement with modern lower-emitting trucks.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades. The ports' Clean Truck Program provides funding for projects that include truck upgrades. GCCOG and Metro are beginning to develop an implementation plan for green trucks in the I-710 freight corridor.	Implemented	Truck	POLA / POLB, AQMD, ARB, GCCOG, Metro	Port Clean Truck Program; ARB Carl Moyer Program
IV	Offer incentives for the installation of pollution controls, including DPFs with LNCs or, if not feasible, with DOCs.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades. The POLA / POLB Clean Truck Program provides funding for projects that include truck upgrades.	Implemented	Truck	POLA / POLB, AQMD, ARB	Port Clean Truck Program; ARB Carl Moyer Program

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IV	Make cleaner fuels, such as diesel emulsions or low-sulfur diesel, available to off-site trucks.	CARB and EPA regulations require ULSD for on-road and off-road vehicles. Emulsified fuels tested in several settings, including POLA, and are certified for use by EPA and CARB. Emulsified fuels listed as a 2010 CAAP strategy for locomotives (RL1). However, no emulsified fuels are currently sold. GCCOG and Metro are beginning to develop implementation plan for green trucks in I-710 freight corridor.	Implemented	Truck	CARB, EPA, GCCOG, Metro	
IV	Minimize truck idling by enforcing idling limits or by installing idle shutoff controls.	CARB Idling restrictions for HD trucks implemented in 2008; 2011 DGRC study confirms that PierPass system (where trucks visit the ports by appointment) significantly reduces idle time of HD trucks in port.	Implemented	Truck	CARB	ARB Diesel Truck Idling Limits Rule
IV	The U.S. government should officially ratify MARPOL Annexes IV and VI (an international treaty that prevents sewage pollution and sets emissions standards for ships) and the Antifouling Systems Convention, which bans toxic chemical coatings on ship hulls.	MARPOL Annex VI standards went into effect July 2010. EPA marine regulations are consistent with Annex VI, including engine standards and North American ECA. US did not ratify Annex IV, but EPA regulates sewage discharge through the Clean Water Act.	Implemented	OGV	IMO	IMO North American Emissions Control Area (ECA)

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V	The EPA should expedite efforts to establish the entire East, West, and Gulf coasts as control zones subject to stricter emission standards until MARPOL VI.	In March 2010 IMO issued the North American ECA. The fuel requirements in the ECA are consistent with EPA regulations on US-flagged vessels and ARB regulations on vessels in coastal waters.	Implemented	OGV	IMO	IMO North American Emissions Control Area (ECA)
V	The EPA should implement a graduated harbor fee system similar to a program in Sweden that requires more polluting ships to pay higher fees upon entering a port.	Port fees are the jurisdiction of port authorities, not EPA. The ports of Long Beach / Los Angeles have instituted a per-TEU fee of \$35 for any container carried by drayage truck, but have not instituted fees related to cleaner ships. Instead, the ports have given incentives for cleaner operations, including a rebate for cleaner fuels in advance of the ARB low-sulfur marine rule.	Not Implemented	OGV	POLA/POLB	
V	The EPA should expedite implementation of stricter emission standards for all marine vessels within two years.	Enacted but not yet implemented. EPA's 2009 Category 3 Marine Engine rule set upcoming Tier standards for marine engine emissions. These standards are consistent with IMO international engine standards. The Tier 2 standards became effective in 2011, and Tier 3 standards become effective in 2016. To date, no ship manufacturers have produced Tier 3 engines in advance of the implementation date.	Partially implemented	OGV	EPA	Category 3 Marine Engine Standards

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V	States and regional authorities should create financial incentives for the cleanup and replacement of older marine vessels.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades.	Implemented	OGV	AQMD, ARB	ARB Carl Moyer Program
IV	States and regional authorities should require ships to plug in to shoreside power while docked.	ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed for cruise vessels and container ships.	Partially implemented	OGV	ARB, POLA, POLB	OGV At-Berth Engine Regulation
V	States should require that ships use low-sulfur diesel while in coastal waters and at berth (until electric power is made available). In the absence of state action, regional authorities should require this.	In July 2008 ARB mandated OGVs to use cleaner burning fuels in main engines, auxiliary engines, and boilers when within 24 nautical miles of the California coastline. These standards require ship operators to switch from heavy fuel oil to low-sulfur marine distillate fuels. ARB Shore Power regulation was passed Dec 2007. Starting in 2014, 50% of a ship fleet's vessels must use shore power. Shore power berths have been installed for cruise vessels and container ships.	Implemented	OGV	ARB, POLA, POLB.	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation; OGV At-Berth Engine Regulation

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IV	Regional authorities should monitor and enforce ship speed limits.	POLA and POLB implemented a voluntary VSR. Vessels get a reduction on dockage fees: 15% if they VSR from 20nm, 25% from 40nm. Currently 98% participation from 20nm, 85% participation from 40nm.	Implemented	OGV	Ports of LA and LB	SPBP-OGV1 OGV Vessel Speed Reduction (VSR)
IV	The EPA must follow through with full implementation of its 2007 emissions standards for on-road, heavy-duty trucks, its 2008 emissions standards for nonroad vehicles and equipment; and the related lower sulfur diesel requirements.	These rules have been promulgated	Implemented	Various		
V	The EPA should adopt a series of diesel retrofit rules, similar to those proposed in the California risk reduction program, to establish a cleanup schedule for existing polluting diesel engines. In the absence of federal action, states or local authority	EPA has adopted rules on fuel sulfur, locomotive and marine engines, on-road, and nonroad equipment.	Implemented	Various		
V	The EPA should set uniform federal idling limits for all diesel engines. In the absence of federal action, state or local authorities should require idling limits.	EPA does not set federal idling limits. ARB has set 5 minute idling limits for trucks, school buses, and off-road vehicles.	Implemented	Various	CARB	ARB rule to reduce idling emissions from trucks, 2008

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I,IV	States should provide incentive programs to reduce pollution from heavy-duty diesel engines, similar to programs such as California's Carl Moyer and Gateway Cities; in the absence of state action, regional authorities should sponsor such programs.	All mentioned programs relevant for the Gateway Cities have been implemented.	Implemented	Various	Ports of LA and LB	Port Clean Truck Program
V	Regional authorities should adopt fleet rules to clean up and require new, cleaner purchases of all heavy-duty engines, similar to those in place in the Los Angeles area.	All mentioned programs relevant for the South Coast have been implemented.	Implemented	Various		
V	The EPA and individual states should consider fees on each container entering a port to provide funding for mitigation of the environmental impacts of moving those containers.	Within the South Coast region, per container fees have been implemented under the CTP for drayage trucks not meeting 2007+ standard. However, the CAAP program's goal is to "target the source of pollution, not cargo in general." Also, the CAAP notes that "Fees collected should be used to clean up the source that generated the fee." Thus not all containers have fees assessed.	Implemented	Various		

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Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
V	The U.S. government should adopt and support a sustainable transportation system program, similar to the European Union program facilitating the shift of cargo transport from more polluting modes (such as trucking) to cleaner locomotive and barge transport	Not implemented as listed. However, within the South Coast region, the ports have been evaluating various Zero Emission Container Movement Systems (ZECMS) for potential application at the ports. This is currently research phase. The short term goal is to determine if ZECMS are feasible for the ports and if so, demonstrate innovative technologies that can be utilized for more efficient and greener movement of cargo. The ultimate goal is to handle the anticipated cargo throughput growth with pollution-free technologies and strategies. There is no national-scale counterpart.	Not Implemented	Various		
II	The EPA should implement stricter emission standard for locomotives within one year.	In 2008, EPA adopted new emissions standards that apply to new and remanufactured locomotives. Tier 3 standards for take effect beginning in 2012 and will require at 50% reduction in PM compared to current (Tier 2) standards. Tier 4 standards take effect beginning in 2015 and will require at 76% reduction in NOx and 85% reduction in PM, compared to current (Tier 2) standards.	Implemented	Rail	EPA	EPA 2008 Locomotives Engine Standards

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
II	States and regional authorities should also create financial incentives for the cleanup and replacement of older locomotives.	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades.	Implemented	Rail	AQMD, ARB	
II	States should negotiate memorandums of understanding that create incentives for cleaner locomotives. In the absence of state action, regional authorities should pursue this.	ARB MOU with UP and BNSF reduces emissions near rail yards. The agreement became effective in 2005. ARB has performed health risk assessment at each rail yard to identify longer-term risk reduction measures.	Implemented	Rail	ARB	Rail Yard Emission Reductions Program
ARB List of Strategies to Reduce Emissions						
IV	Vessel Speed Reduction Agreement for Southern California	POLA and POLB implemented a voluntary VSR. Vessels get a reduction on dockage fees: 15% if they VSR from 20nm, 25% from 40nm. Currently 98% participation from 20nm, 85% participation from 40nm.	Implemented	OGV	Ports of LA and LB	SPBP-OGV1 OGV Vessel Speed Reduction (VSR)
III	U.S. EPA Main Engine Emission Standards	EPA's final standards for large (Category 3) marine engines were published in April 2010. Requirements are phased in 2011 and 2016, requiring 80% NOx reduction from the baseline. Requirements are consistent with MARPOL Annex VI.	Implemented	OGV	EPA	Category 3 Marine Engine Standards

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
III	U.S. EPA Non-Road Diesel Fuel Rule	The Clean Air Non-Road Diesel Rule was implemented in 2004 and cut fuel sulfur levels that to 500 ppm in 2007 and 15 ppm in 2010, along with introduction of Tier 4 engine emission standards.	Implemented	CHE		EPA Clean Air Non-Road Diesel Rule
IV	ARB Rule for Ship Auxiliary Engine Fuel	In July 2008 ARB adopted regulations that mandate use of low sulfur fuel in ship main engines, auxiliary engines, and boilers when within 24 nautical miles of the California coastline.	Implemented	OGV	ARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation
IV	Cleaner Marine Fuels	Regulations on cleaner fuels have been enacted at the state, federal, and international level. ARB's low-sulfur regulation calls for marine fuel with less than 1000ppm sulfur within 24 nm of the California coastline. New EPA regulations implementing an emission control area (ECA) along the North American coastline are under IMO Annex VI will address main and auxiliary engine fuels.	Implemented	OGV	ARB	OGV Main and Auxiliary Engine Low-Sulfur Fuel Regulation

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
III	Emulsified Fuels	Tested but not adopted. Emulsified fuels reduce pollution by blending diesel with water. Emulsified fuels have been tested in several settings, including POLA, and have been certified for use by EPA and CARB. Emulsified fuels are listed as a 2010 CAAP strategy for locomotives (RL1). However, no emulsified fuels are currently sold.	Partially implemented	CHE	Ports	
IV	Expanded Vessel Speed Reduction Programs	In accordance with the CAAP, POLA and POLB have instituted a voluntary speed reduction program. Vessels get a reduction on dockage fees: 15% if they VSR from 20nm, 25% from 40nm. Currently 98% participation from 20nm, 85% participation from 40nm.	Implemented	OGV	Ports of LA and LB	SPBP-OGV1 OGV Vessel Speed Reduction (VSR)
IV	Install Engines with Emissions Lower than IMO Standards in New Vessels	EPA's 2009 Category 3 Marine Engine rule set upcoming Tier standards for marine engine emissions. These standards are consistent with IMO international engine standards. The Tier 2 standards became effective in 2011, and Tier 3 standards become effective in 2016. To date, no ship manufacturers have produced Tier 3 engines in advance of the implementation date.	Not Implemented	OGV	EPA	Category 3 Marine Engine Standards

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
IV	Dedicate the Cleanest Vessels to California Service	Several clean air plans have suggested that clean vessels be dedicated to California service; however, this requirement is not practical due to shipping patterns. Ships typically travel to several ports in succession, moving along the west coast.	Not Implemented	OGV	None	
IV	Shore Based Electrical Power	ARB's 2007 at-berth regulation requires ships to use shore power while in port. The requirements are phased in from 2010 to 2020, in which 80% of all ship calls must use shore power. Terminals at the Port of Los Angeles have installed cold ironing facilities at several berths.	Implemented	OGV	ARB	OGV At-Berth Engine Regulation
V	Incentives for Cleaner Engines	The CAAP provides incentives for early adaptation of EPA engine regulations under HDV1, OGV5, CHE1, HC1, RL1, RL2, and RL3.	Implemented	Various		
III	ARB Low Sulfur Diesel Fuel Rule	The ARB has passed regulations on use of low sulfur diesel for marine (2004, 2005 and 2008), locomotive (2004), and highway and non-highway engines (2003).	Implemented	Various		

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
III	ARB Rule to Clean Up Existing Engines	ARB has instituted several in-use vehicle regulations. The truck and bus rule (2008) requires that fleet owners phase in BACT for PM and NOX between 2011 and 2023. In 2007 ARB enacted similar regulations for off-road engines, although in 2010 these regulations were postponed indefinitely. These regulations complement EPA tier standards that apply when existing engines are rebuilt.	Implemented	Various	ARB	In-use truck and bus rule, in-use off-road vehicle rule
IV	Shore Based Electrical Power	ARB's 2007 at-berth regulation requires ships to use shore power while in port. The requirements are phased in from 2010 to 2020, in which 80% of all ship calls must use shore power. Terminals at the Port of Los Angeles have installed cold ironing facilities at several berths.	Implemented	OGV	ARB	OGV At-Berth Engine Regulation

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
V	New Engine Emission Standards	EPA has enacted more stringent engine emission standards for most vehicle types, although some not yet implemented. Passed in 2000, the "2007 truck rule" established stringent truck engine and fuel standards to be phased in by 2007. The 2008 Category 1/2 Rule for locomotive and medium-size marine engines introduces new standards that are phased into place by 2015. The 2009 Category 3 marine rule for large marine engines will apply the most stringent standards in 2016.	Partially implemented	Various	EPA	EPA 2007 truck rule, 2008 Cat 1/2 rule, 2009 Cat 3 rule.
IV	ARB Low Sulfur Diesel Fuel Rule	The ARB has passed regulations on use of low sulfur diesel for marine (2004, 2005 and 2008), locomotive (2004), and highway and non-highway engines (2003).	Implemented	Various	ARB	ARB Marine Aux. Engine Clean Fuel Reg, Marine and Locomotive Diesel Fuel Rule, Hwy and Non-highway Diesel Fuel Rule, Marine Main Engine Fuel Reg.

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
III	ARB/U.S. EPA Tier 4 Emission Standard	In 2008, US EPA finalized the Locomotive and Marine rule setting Tier 3 and 4 standards for Category 1 and 2 engines. EPA non-road Tier 4 rules complement the 2007+ on-road rules and were adopted in 2004. ARB has complimentary regulations.	Implemented	Various	EPA	EPA Locomotive and Marine Rule. EPA Clean Air Nonroad Diesel Rule
V	ARB Stationary Diesel Engine Rule	The ARB's Stationary Diesel Engines was adopted in 2004 and establishes new emission standards for stationary engines that are used primarily in emergency backup power applications. It also requires the use of cleaner fuels, limits the amount of operating time for maintenance, requires PM reductions for in-use engines, and sets operating limits near schools.	Implemented	CHE	ARB	Stationary Diesel Engine Rule
V	ARB Portable Diesel Equipment Rule	ARB's Portable Diesel Engines Rule was adopted in 2004 and applies to diesel fueled portable engines used for water pumping, power generation, welding equipment, etc. By 2010, all portable engines would have to meet Tier 1, 2, or 3 EPA engines standards. After 2010, fleets of portable engines would have to meet increasingly stringent fleet averages. By 2020, all portable engines would need to effectively meet EPA Tier 4 PM standards.	Implemented	CHE	ARB	Portable Diesel Engine Rule

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
V	Incentives for Cleaner Fuels	Low sulfur petroleum fuels use has been mandated in all sectors (currently all but interstate rail use the fuels). Alternative fuel use has been promoted and incentivized by national programs such as DERA, state programs such as Moyer, and local programs such as the CAAP.	Implemented	Various	EPA, ARB, Ports	
IV	ARB Rule for Diesel Cargo Handling Equipment	ARB's Cargo Handling Equipment Rule was adopted December 2005 and requires rail yards and port facilities to purchase cleaner off-road equipment and retrofit existing equipment with BACT.	Implemented	CHE	ARB	Regulation for Mobile CHE at Ports and Intermodal Rail Yards
V	ARB Rule for Gas Industrial Equipment	ARB's updated regulation of Emission Standards, Test Procedures, and Fleet Requirements for Large Spark-Ignition (LSI) Engine Forklifts and Other Industrial Equipment was adopted in 2006 and amended in 2010.	Implemented	CHE	ARB	ARB LSI Regulation
III	ARB/U.S. EPA 2007 New Truck Emission Standards	The EPA 2007 truck rule creates tighter emission standards for new model trucks starting in 2007. The ARB In-Use Truck and Bus rule applies emission requirements to the in-use truck fleet. The truck and bus rule complements the in-use requirements of the ARB drayage rule.	Implemented	Truck	ARB, EPA	In-Use Truck & Bus Rule; Clean Diesel Standards Regulation

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
I	Vehicle Replacement Incentives	ARB Carl Moyer program (administered in conjunction with AQMD) provides funding for cleaner on-road, off-road, marine, locomotive, and agricultural sources. The Prop 1B bond issue provides grants for cleaner equipment and upgrades. The POLA / POLB Clean Truck Program provides funding for projects that include truck upgrades.	Implemented	Truck	POLA / POLB, AQMD, ARB	Port Clean Truck Program; ARB Carl Moyer Program.
III	ARB Low Sulfur Diesel Fuel Rule	The ARB has passed regulations on use of low sulfur diesel for marine (2004, 2005 and 2008), locomotive (2004), and highway and non-highway engines (2003).	Implemented	Various	ARB	
I	ARB Smoke Inspections for Trucks in Communities	ARB Heavy Duty Vehicle Inspection Program performs testing for excessive smoke, tampering, and engine certification label compliance. The Periodic Smoke Inspection Program requires that fleet owners perform annual smoke opacity inspections. As of 2010, medium duty trucks (less than 14,000 GWVR) must also pass smog tests. CARB conducted 1,256 HDV inspections on So California in 2010.	Implemented	Truck	ARB	Heavy Duty Vehicle Inspection Program, Periodic Smoke Inspection Program

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
I	Community Reporting of Violators	ARB maintains a vehicle compliance hotline (1-800-END-SMOG) that allows residents to report smoking or idling buses, trucks, and locomotives.	Implemented	Truck	ARB	ARB Compliant Program
V	ARB Truck Idling Limits	ARB has adopted regulations that limit idling of all trucks to 5 minutes. Trucks with sleeper cabs must have anti-idling equipment installed. Additional requirements for truck APUs. Strict limits on school buses.	Implemented	Truck	ARB	School Bus Idle Reduction Program, Heavy-Duty Vehicle Idling Emission Reduction Program
V	ARB Low NOx Software Upgrade Rule	ARB has suspended enforcement of the NOx Software Upgrade Rule. The Sacramento County Superior Court has ruled that the regulation is invalid. ARB has not appealed that ruling.	Not Implemented	Truck	ARB	NOx Software Upgrade Rule
V	ARB International Trucks Rule	ARB rule adopted in 2006. Requires international trucks to meet the applicable U.S. emission standards.	Implemented	Truck	ARB	International Trucks Rule
V	ARB Private Truck Fleets Rule	Superseded by ARB In-Use Truck Rule. The ARB In-Use Truck and Bus rule applies emission requirements to the in-use truck fleet. The truck and bus rule complements the in-use requirements of the ARB drayage rule.	Implemented	Truck	ARB	In-Use Truck and Bus Rule

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
I,IV	Port Truck Modernization	Port Clean Trucks Program requires drayage trucks to meet environmental standards. The CTP accelerates the implementation of CARB truck & bus rule.	Implemented	Truck	POLA / POLB	Port Clean Truck Program
V	Enhanced Enforcement of Truck Idling Limits	Anti-idling regulations are enforced by many parties: ARB inspects trucks at border crossings and weigh stations. Local enforcement agencies can cite and ticket trucks. ARB maintains a community hotline to report offenders.	Implemented	Truck	ARB	ARB rule to reduce idling emissions from trucks, 2008
III	ARB Low Sulfur Diesel Fuel Rule	The ARB has passed regulations on use of low sulfur diesel for marine (2004, 2005 and 2008), locomotive (2004), and highway and non-highway engines (2003).	Implemented	Various	ARB	
III	ARB 2005 Agreement with Railroads to Cut PM Statewide	ARB MOU with UP and BNSF reduces emissions near rail yards. The agreement became effective June 30 2005. ARB has performed health risk assessment at each rail yard to identify longer-term risk reduction measures. In 2010 agreement update, railroads agreed to achieve 85% PM reduction by 2020 (compared to 2005) at BNSF Hobart, UP Commerce, and UP ICTF/Delores rail yards.	Implemented	Rail	ARB	Rail Yard Emission Reductions Program

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
IV	Upgrade Engines in Switcher Locomotives	The 2008 EPA engine regulations set tighter standards for remanufactured engines. State grant programs (Carl Moyer, Prop 1B) can provide some funding for upgrades. PHL has upgraded its switcher fleet to Tier 2, and is upgrading 2/3 of the fleet to Tier 3. UP and BNSF operate 71 GenSet switchers in So. California.	Partially implemented	Rail	EPA, ARB, ports, railroads	EPA Locomotives Engine Standards; ARB MOU
I,IV	Retrofit Diesel PM Control Devices on Existing Engines	DPMs have shown to be effective and feasible in trucks and off-road vehicles, and will be required as part of EPA Tier 4 nonroad and locomotive engine standards. Retrofits may be required under the ARBs Commercial Harbor Craft and Cargo Handling Equipment Rules, In Use Truck Rule, and Off Road In Use Fleet Rule.	Implemented	Various	EPA	2008 EPA Cat 1/2 Engine Rule, ARB H/C Rule, CHE Rule, Off Road Fleet Rule
III	Use of Alternative Fuels	Various alternative fuels programs are being implemented at the Ports, including CNG, Propane, and various forms of electrification. Approx. 900 LNG truck now serve the ports. Due to NOx penalty, most biofuels have not been pursued.	Implemented	Various	Ports	

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
V	Efficiency Improvements	System efficiency is not directly targeted by ARB or EPA regulations, or by Port policies. ARB climate change regulations require use of SmartWay fuel saving technologies on long-haul trucks. SCAG Goods Movement Plan is promoting system efficiency improvements.	Partially implemented	Various		AB 32 Scoping Plan
II	Transport Mode Shifts	Mode shifts are not directly targeted by ARB or EPA regulations, or by Port policies. Ports have been investing in improvements to increase on-dock rail use.	Not Implemented	Various		
V	Land Use Decisions	There has been no coordinated effort to reduce goods movement emissions through land use planning, although SB 375 requires LDV GHG reductions and will encourage compact development. Land use decisions are be made by local municipalities. GCCOG has completed its Sustainable Communities Strategy (SCS) report to address SB 375 and submitted it to SCAG for inclusion in the RTP update.	Partially implemented	Various	CARB, SCAG, GCCOG	SB 375

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Original Compendium Measure		ICF Team Findings				
Category*	Program or Recommendation	Status Description	Implementation Status	Sector** (emissions source)	Responsible Agency	Relevant Regulation (if noted)
V	Project And Community Specific Mitigation	The measures considered for the Ports and surrounding communities are specifically tailored for the two ports and surrounding community. Nearly all major goods movement projects at the ports and elsewhere in the region involve significant project-specific mitigation. To be addressed in the AQAP.	Implemented	Various	GCCOG	

* Category refers to the following 5 categories identified in the original 2006 compendium:

- I. Diesel Trucks
- II. Air Quality Plans/Proposals
- III. Alternative Fuels/Technologies
- IV. Ports' Air Quality Improvements
- V. Other Incremental or Near-Term Improvements or Programs

** Sector or emissions source refers to:

- Heavy duty truck (Truck)
- Locomotives (Rail)
- Ocean going vessels (OGV)
- Harbor craft (HC)
- Cargo handling equipment (HC)
- Multiple goods movement sources (Various)
- Non mobile sources (Other)

Table 2: Summary of Measure Implementation Status by Sector (Emissions Source)

Number of Measures						
Sector (Emissions Source)	Implemented	Partially Implemented	Not Implemented	Total		
Trucks	24	6	4	34		
Measures Not Implemented:						
<ul style="list-style-type: none"> Require all trucks using the truck lanes on the I-710 to use alt fuels or other pollution controls. Electronic screening of commercial vehicles that have good safety inspection records, allowing them to bypass roadside inspection and weigh facilities (currently under study). Virtual container yard ARB Low NOx Software Upgrade Rule 						
Rail	12	5	3	20		
Measures Not Implemented:						
<ul style="list-style-type: none"> Alameda Corridor electrification (listed twice) Shuttle trains 						
Ocean Going Vessels	25	6	5	36		
Measures Not Implemented:						
<ul style="list-style-type: none"> Retrofit/Re-power Requirements for Infrequent Callers Program to encourage or require ship operators to use their newest/lowest emitting vessels calling at the port Graduated harbor fee system similar to a program in Sweden that requires more polluting ships to pay higher fees upon entering a port Install Engines with Emissions Lower than IMO Standards in New Vessels Dedicate the Cleanest Vessels to California Service 						
Harbor Craft	3	0	2	5		
Measures Not Implemented:						
<ul style="list-style-type: none"> Biofuels for Harbor Craft - a program to encourage or require the use of biofuels in harbor craft operating in Los Angeles Harbor. Clean up harbor craft, such as tugboats, through engine repower and retrofit programs. 						
Cargo Handling Equipment	13	3	1	17		
Measures Not Implemented:						
<ul style="list-style-type: none"> Installation of liquefied natural gas (LNG) refueling terminal within the port to support the use of LNG-powered cargo handling equipment. 						

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Number of Measures					
Sector (Emissions Source)	Implemented	Partially Implemented	Not Implemented	Total	
Various	27	11	2	40	
Measures Not Implemented:					
<ul style="list-style-type: none"> The U.S. government should adopt and support a sustainable transportation system program, similar to the European Union program facilitating the shift of cargo transport from more polluting modes (such as trucking) to cleaner locomotive and barge transport Transport mode shifts 					
Other	2	0	0	2	
Total	112	24	18	154	

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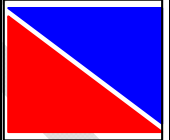
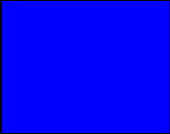
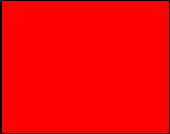
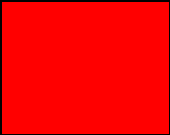

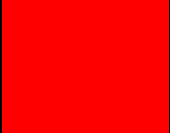
Table 3: Original 2006 Compendium

Category*	Program or Recommendation	Status**	Comments
Tier 2 Committee Recommendations on Health and Air Quality			
II	Establishing a baseline of current levels of pollution from each contributing source using the best available technology.	short	Ports' Emission Inventory Update
II	Identify the level of air quality impacts from increasing trucking, rail, and shipping.	short	
II	Determine the approximate costs of health care that can be traced to the differential levels of air pollution to be encountered by corridor community members as a result of the construction effort, if it goes forward as envisioned.	short	Health Risk Assessment - may not include costs
II	Study the direct and indirect health and other economic costs on communities and the region caused by global trade and its associated pollution impacts.	long	Health Risk Assessment - may not include costs
I	Use enforcement, truck inspections, and incentives to control emissions.	short	
	Require air quality improvements in port operation as a condition of project approval.	long	
II	Encourage the development and expansion of fleet modernization clean air programs.	short	
II	Levy fees on containers to fund environmental improvements and community programs to address hidden costs attributable to goods movement impacts including: <ul style="list-style-type: none"> • Health care • Alternative fuels • Improvements/construction of I-710 infrastructure • Beautification of the corridor 	short	State legislative bill pending
		short	
		short	
		short	
V	Develop infrastructure that quantifies emission reductions; i.e., permanent monitoring stations to measure emissions levels in the corridor.	long	
V	Develop and implement improved air quality monitoring techniques.	long	
III	Make the use of alternative fuels a priority.	mid	
III	Discourage the use of out-of-state fuel.	short	







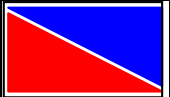





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Category*	Program or Recommendation	Status**	Comments
III	All trucks, regardless of origin, must be subject to local, state, and federal standards.	short	
	Require all trucks using the truck lanes on the I-710 to use alternative fuels as defined above, or pollution controls which achieve equal or better results.	long	
IV,V	Require all railroad locomotives servicing two ports, or any rail yards connected with port container traffic, to use alternative fuels as defined above, or pollution controls that achieve equal or better results.	short	
	Require the Alameda Corridor Transportation Authority to prepare a plan to electrify all locomotives involved in its operations.	long	
	Retrofit schools, homes, and parks to increase protection from noise and pollution.	long	
I	Identify location and develop facility for one-stop truck inspection.	short	
V	Provide incentives for businesses to accept off-peak deliveries.	short	No incentives but off-peak program in effect (PIER PASS)
I	Create programs to assist truck owners with engine/equipment upgrades and retrofits.	short	
	Restrict port-generated traffic onto I-710 until improved fuels programs or other pollution emissions mitigation programs are implemented	long	
V	Provide landscaping, specifically including tree planting, to improve air quality.	short	Caltrans implementing
IV	Require ports to develop plans to electrify other terminal operations as a priority.	short	
IV	Require all rubber-tired gantry cranes to be electrified.	short	
IV	Require all ships docking in the Ports of Los Angeles and Long Beach to shut down all diesel engines and use shore electric power.	mid	
IV	Require the ports to expedite development of effective pollution controls for ships.	mid	
IV	Make mandatory the proposal of CARB to require that ships entering the coastal waters of California switch to low sulfur diesel fuel. Require the ports to provide financial subsidy if necessary to implement this requirement.	mid	

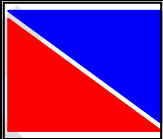



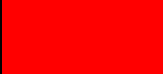




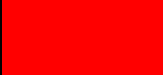

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Category*	Program or Recommendation	Status**	Comments
IV	Include trucks, trains and rail yards, marine vessels, and port equipment in clean air initiatives.	short	
IV	Require all terminal equipment at the ports to operate on alternative fuel as defined by CARB. This includes Liquid Petroleum Gas, Compressed Natural Gas, or Liquid Natural Gas. As an alternative, require all engines to be equipped with pollution controls.	mid	
	Establish a fund that shippers must pay into, that provides rebates to those who adopt the use of clean air engines for vehicles. Ensure that this program accomplishes the goals of decreasing pollution rather than a pay-to-pollute program.	long	
(COG) Clean Air Program			
I,II,IV	While replacing 373 trucks is significant, there are thousands of older port drayage trucks that could be replaced. Additional funding and incentives -- as well as a firm schedule -- would be needed to increase the rate of replacement.	short	 Cog replaced 481 trucks to date
(COG) Safety Action Initiative			
I	Tracking of trucks that are registered in the Gateway Cities clean air program to ensure that they stay in the region. All trucks modified by Gateway Cities since mid-2005 are being equipped with GPS tracking devices for this very purpose.	short	 Now in COG truck replacement program
I	Electronic screening of commercial vehicles that have good safety inspection records, allowing them to bypass roadside inspection and weigh facilities.	short	
II	Optimization of freeway routes leading to less congestion and improved air quality.	short	



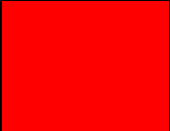
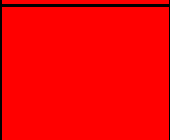

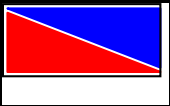
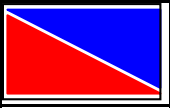
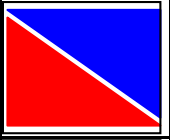
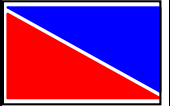

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Category*	Program or Recommendation	Status**		Comments
	Ports/ACTA Truck-Related Impact by Strategy			
	Virtual Container Yard	short		Reduces # of empty container truck trips
V	Extended Gate Hours	short		Spreads truck traffic over more hours (PIER PASS)
IV,V	Increased On-Dock Rail	mid		Reduces # of truck trips to rail yards
IV,V	New Near-Dock Rail Yard	long		Shortens truck trips to rail yards
V	Shuttle Trains	long		Reduces # of truck trips to local warehouses
V	SR-47 Viaduct	long		Provides alternative truck route
	Port of Long Beach Green Port Policy			
IV	Vessel Speed Reduction (Green Flag Program) - voluntary, incentivised program requiring ships to slow to 12 knots at a distance of 20 miles from Point Fermin.	mid		
IV	Shore Power - the Port has committed to a goal of providing shore power to all new and existing container terminals; The Port's ultimate goal is to have 100% of vessels at container terminals plug in once the infrastructure has been retrofitted.	mid		
IV	Retrofit/Re-power Requirements for Infrequent Callers - Port lease language will require the use of exhaust controls or clean fuels in the auxiliary engines of vessels that do not use shore power.	mid		
IV	Main Engine Fuel Improvement - the Port is considering incentives as part of the Green Flag Program for the use of low-sulfur (initially 1.5%) diesel or equivalent.	mid		
IV	Auxiliary Engine Fuel Improvement - lease language will require the use of fuel with 0.2% or lower sulfur content or equivalent, or exhaust gas treatment, in auxiliary engines while ships are at berth.	mid		
IV	Vessel Smoke Stack Emission Reduction - POLB Security will continue to issue warnings and citations to vessels in order to eliminate excess smoke and reduce vessels emissions while at berth.	short		

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Category*	Program or Recommendation	Status**		Comments
IV	West Coast Sulfur Emission Control Area (SECA) - in January 2005, the Long Beach Board of Harbor Commissioners adopted a resolution urging the United States to ratify Annex VI of the International Convention for the Prevention of Marine Pollution From Ships.	mid		
IV	The Port will replace or re-power, or convert to cleaner fuels, survey boats and other Port-owned harbor craft.	short		
IV	Yard Tractor Modernization & Alternative Diesel Fuel Programs - lease language will commit tenants to meet contemporary CARB and EPA emission standards in new equipment, use clean fuels in existing equipment, and retire older equipment.	short		
IV	Enhanced Cargo Handling Modernization - lease language will require accelerated replacement of terminal equipment with equipment meeting future off-road standards for diesel engines.	short		
IV	Diesel Emissions Reduction Program - container terminal cargo handling equipment has been converted to exhaust controls and clean diesel fuel.	short		
IV	PHL Switcher Locomotive Modernization & Emulsified Diesel Program - PHL rail locomotives are being replaced in 2007; use idle limiting devices; test DOCs.	short		
IV	Ultra-Low Emission Switcher Locomotives - requires PHL to deploy Green Goat and LNG switchers.	short		
IV	Idling Controls on Switcher & Line Haul Locomotives - install controls on PHL equipment; Ports cannot install equipment on Class 1 line haul locomotives.	short		
IV	ARB Diesel Fuel for Class 1 Locomotives - support of this measure would be part of the Green Port legislative agenda.	short		
I,IV	Gateway Cities Truck Modernization - subsidies are being considered by POLB to commercial truck owners that trade in their diesel trucks with older engines for models with newer, cleaner-burning engines.	short		
I,IV	Retrofit Heavy-Duty Diesel Vehicles with Diesel Oxidation Catalysts (DOCs) or Diesel Particulate Filters (DPFs) - for future container terminal projects, the Port will require installation of exhaust controls on older trucks serving the terminal.	short		

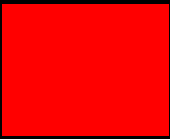
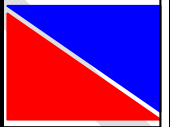
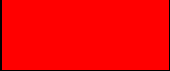
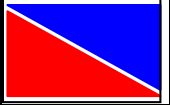



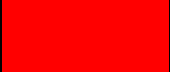


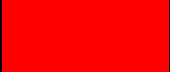


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Category*	Program or Recommendation	Status**	Comments
V	Truck Idling Reduction Measures - the Port will require truck idling limits for on-road trucks within Port boundaries.	short	
IV	Petroleum Coke Dust Control - the Port will continue to implement the Rule 1158 program aimed at reducing fugitive dust from petroleum coke operations.	short	
IV	Electric Dredging - additional electrical receptacles will be placed around the Port to facilitate the switch to electric dredging; beginning in 2008, the Port will require all non-maintenance dredging to be conducted with electric equipment.	short	
IV	Port Ride Share Program - the SCAQMD, under Rule 2202, requires employers of 250 or more employees to establish rideshare programs; the City of Long Beach developed a program in response to this requirement and the Port participated in the program.	short	
Port of Los Angeles Clean Air Program			
IV	Vessel Speed Reduction - A voluntary program under which vessels are slowed within an agreed-upon distance from the port, reducing emissions of NOx.	short	
IV	Alternative Maritime Power - a program for ships to use shore power instead of fuel-burning auxiliary engines while at berth (also known as cold-ironing).	mid	
IV	Auxiliary Engine Fuel Improvement Program - a program to encourage or require the use of progressively lower sulfur fuel (i.e., marine diesel oil) in auxiliary engines of ocean-going vessels at they approach the port.	mid	
IV	Main Engine Fuel Improvement Program - a program to encourage or require the use of lower sulfur fuel in main engines of ocean-going vessels at they approach the port. This measure may be superseded by the implementation of a Sulfur Emission Control Area.	mid	
IV	Low Emission Main Engines - a program to encourage the development and use of low emission main propulsion engines (i.e., Blue-Sky series/Category 3 engines) for marine vessels calling at the port.	mid	
IV	Reroute cleanest ships - a program to encourage or require ship operators to use their newest/lowest emitting vessels calling at the port.	short	

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Category*	Program or Recommendation	Status**	Comments
IV	Biofuels for Harbor Craft - a program to encourage or require the use of biofuels in harbor craft operating in Los Angeles Harbor.	short	
IV	China Shipping Settlement Air Quality Mitigation Measures for Harbor Craft - Existing measures recommended by the Technical Advisory Committee (TAC) and implemented by the port, including repowering/retrofitting harbor craft main and auxiliary engines.	short	
IV	Alternative-Fuel Equipment - a program to replace existing diesel-fueled cargo handling equipment with equipment powered by alternative fuels or electricity.	short	
IV	China Shipping Air Quality Mitigation Measures for Cargo Handling Equipment - Existing measures recommended by the Technical Advisory Committee (TAC) and implemented by the port, including replacing cargo handling equipment with low emission alternatives.	short	
IV	Alternative Fuel Infrastructure for Cargo Handling Equipment - Installation of liquefied natural gas (LNG) refueling terminal within the port to support the use of LNG-powered cargo handling equipment.	mid	
IV	Pacific Harbor Line (PHL) Modernization - a voluntary program initiated by the port (in conjunction with the PHL and the Port of Long Beach) to modernize PHL switcher locomotives and initiate the use of ultra-low sulfur diesel (ULSD) fuel.	short	
IV	Idling Controls for Switcher and Line Haul Locomotives - a program to encourage or require the installation of idling controls on switcher and line haul locomotives operating in the port. Idling controls automatically shut off engines after pre-set length.	short	
	Electrification of Alameda Corridor and Alameda Corridor East - a measure to encourage and facilitate the conversion of the Alameda Corridor and related rail infrastructure from diesel power to electric.*	long	
IV	Locomotive Technology Replacements - a measure to research and encourage the development of low emission alternatives to diesel locomotive power, including magnetic levitation*, alternative fuels, fuel cells, and fueled/electric hybrids.	short	

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Category*	Program or Recommendation	Status**	Comments
IV	On-Road Heavy Duty Truck Alternative Fuels Program - a program to encourage and facilitate replacement of diesel trucks with alternative fueled trucks (i.e., LNG and hydrogen). The primary mechanisms will be through the existing Gateway Cities truck mode.	short	
IV	Alternative Fuel Infrastructure for Heavy Duty Vehicles (HDVs) - installation of LNG refueling stations within the port and greater Los Angeles area to support the use of LNG-powered on-road trucks. In addition, installation of a hydrogen fueling station.	mid	
Natural Resources Defense Council (NRDC) and the Coalition for Clean Air (CCA) Recommendations to Ports			
IV	Clean up harbor craft, such as tugboats, through engine repower and retrofit programs.	short	
IV	Limit idling of oceangoing vessels and tugboats by providing electric power at docks and requiring ships and tugboats to "plug in" to shoreside power while at berth.	mid	
IV	Require ships, including oceangoing vessels, to use the cleanest grade of diesel fuel possible, with a sulfur content of 15 to 2,000 parts per million.	mid	
IV	Where possible, create incentives for, or otherwise promote the use of, emission controls on oceangoing vessels.	long	
IV	Retire equipment that is ten or more years old and replace it with the cleanest available equipment and fuel choices, preferably alternative fuels.	short	
IV	Retrofit existing equipment less than ten years old to run on the best available control technology, including diesel particulate filters (DPFs) with lean NOx catalysts (LNCs) and, if not feasible, with diesel oxidation catalysts (DOCs).	short	
IV	Switch to cleaner diesel fuels, such as low-sulfur fuel with sulfur content less than 15 parts per million and diesel emulsions.	short	
IV	Repower or replace all switching locomotives that do not meet the Environmental Protection Agency (EPA) Tier 0 Standards with electric-hybrid or alternative-fuel engines.	short	
IV	Install engine emissions controls where possible.	short	
IV	Require automatic engine shutoff controls to minimize unnecessary idling.	short	
IV	Commit to using cleaner fuels, such as on-road grade diesel.	short	

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Category*	Program or Recommendation	Status**	Comments
IV	Create incentive programs that encourage fleet modernization, the retirement of older trucks, and their replacement with modern lower-emitting trucks.	long	
IV	Offer incentives for the installation of pollution controls, including DPFs with LNCs or, if not feasible, with DOCs.	short	
IV	Make cleaner fuels, such as diesel emulsions or low-sulfur diesel, available to off-site trucks.	short	
IV	Minimize truck idling by enforcing idling limits or by installing idle shutoff controls.	short	
IV	The U.S. government should officially ratify MARPOL Annexes IV and VI (an international treaty that prevents sewage pollution and sets emissions standards for ships) and the Antifouling Systems Convention, which bans toxic chemical coatings on ship hulls.	short	
	The EPA should expedite efforts to establish the entire East, West, and Gulf coasts as control zones subject to stricter emission standards until MARPOL VI.	short	
	The EPA should implement a graduated harbor fee system similar to a program in Sweden that requires more polluting ships to pay higher fees upon entering a port.	long	
	The EPA should expedite implementation of stricter emission standards for all marine vessels within two years.	long	
	States and regional authorities should create financial incentives for the cleanup and replacement of older marine vessels.	long	
IV	States and regional authorities should require ships to plug in to shoreside power while docked.	mid	
	States should require that ships use low-sulfur diesel while in coastal waters and at berth (until electric power is made available). In the absence of state action, regional authorities should require this.	long	
IV	Regional authorities should monitor and enforce ship speed limits.	short	
IV	The EPA must follow through with full implementation of its 2007 emissions standards for on-road, heavy-duty trucks, its 2008 emissions standards for nonroad vehicles and equipment; and the related lower sulfur diesel requirements.	short	

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Category*	Program or Recommendation	Status**	Comments
	The EPA should adopt a series of diesel retrofit rules, similar to those proposed in the California risk reduction program, to establish a cleanup schedule for existing polluting diesel engines. In the absence of federal action, states or local authority.	long	
	The EPA should set uniform federal idling limits for all diesel engines. In the absence of federal action, state or local authorities should require idling limits.	long	
I,IV	States should provide incentive programs to reduce pollution from heavy-duty diesel engines, similar to programs such as California's Carl Moyer and Gateway Cities; in the absence of state action, regional authorities should sponsor such programs.	long	
	Regional authorities should adopt fleet rules to clean up and require new, cleaner purchases of all heavy-duty engines, similar to those in place in the Los Angeles area.	long	
V	The EPA and individual states should consider fees on each container entering a port to provide funding for mitigation of the environmental impacts of moving those containers.	short	Being proposed in State Legislature
	The U.S. government should adopt and support a sustainable transportation system program, similar to the European Union program facilitating the shift of cargo transport from more polluting modes (such as trucking) to cleaner locomotive and barge transport.	long	
II	The EPA should implement stricter emission standard for locomotives within one year.	mid	CARB is preparing
II	States and regional authorities should also create financial incentives for the cleanup and replacement of older locomotives.	long	CARB is preparing
II	States should negotiate memorandums of understanding that create incentives for cleaner locomotives. In the absence of state action, regional authorities should pursue this.	short	CARB is preparing
ARB List of Strategies to Reduce Emissions			
IV	Vessel Speed Reduction Agreement for Southern California	short	
III	U.S. EPA Main Engine Emission Standards	short	
III	U.S. EPA Non-Road Diesel Fuel Rule	short	

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Category*	Program or Recommendation	Status**	Comments
IV	ARB Rule for Ship Auxiliary Engine Fuel	short	
IV	Cleaner Marine Fuels	short	
III	Emulsified Fuels	long	
IV	Expanded Vessel Speed Reduction Programs	short	
IV	Install Engines with Emissions Lower than IMO Standards in New Vessels	long	
IV	Dedicate the Cleanest Vessels to California Service	mid	
IV	Shore Based Electrical Power	mid	
	Incentives for Cleaner Engines	long	
III	ARB Low Sulfur Diesel Fuel Rule	short	
III	ARB Rule to Clean Up Existing Engines	short	
IV	Shore Based Electrical Power	mid	
	New Engine Emission Standards	mid	
IV	ARB Low Sulfur Diesel Fuel Rule	mid	
III	ARB/U.S. EPA Tier 4 Emission Standard	short	
	ARB Stationary Diesel Engine Rule	short	
	ARB Portable Diesel Equipment Rule	short	
	Incentives for Cleaner Fuels	short	
IV	ARB Rule for Diesel Cargo Handling Equipment	short	
	ARB Rule for Gas Industrial Equipment	short	
III	ARB/U.S. EPA 2007 New Truck Emission Standards	short	
I	Vehicle Replacement Incentives	short	
III	ARB Low Sulfur Diesel Fuel Rule	short	
I	ARB Smoke Inspections for Trucks in Communities	short	
I	Community Reporting of Violators	short	
V	ARB Truck Idling Limits	short	
	ARB Low NOx Software Upgrade Rule	short	
	ARB International Trucks Rule	short	

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Category*	Program or Recommendation	Status**	Comments
	ARB Private Truck Fleets Rule	short	
I,IV	Port Truck Modernization	short	
V	Enhanced Enforcement of Truck Idling Limits	short	
III	ARB Low Sulfur Diesel Fuel Rule	short	
III	ARB 2005 Agreement with Railroads to Cut PM Statewide	short	
IV	Upgrade Engines in Switcher Locomotives	short	
I,IV	Retrofit Diesel PM Control Devices on Existing Engines	short	
III	Use of Alternative Fuels	short	
	Efficiency Improvements	short	
II	Transport Mode Shifts	short	
	LAND USE DECISIONS	long	
	PROJECT AND COMMUNITY SPECIFIC MITIGATION	long	

* Category refers to the following

TABLE OF CONTENTS	SHEET NO.
I. Diesel Trucks	1
II. Air Quality Plans/Proposals	2
III. Alternative Fuels/Technologies	3
IV. Ports' Air Quality Improvements	4
V. Other Incremental or Near-Term Improvements or Programs	5

** Status refers to the following:

Short

 Initiated now or within 5 years

Mid

 Programs that fall within a 0-10 year period

Long

 Not initiated or within 5 years