American Association of Port Authorities

Alliance of the Ports of Canada, the Caribbean, Latin America and the United States

2007 ENVIRONMENTAL AWARDS COMPETITION

ENTRY FORM

This form must be submitted with each Environmental Award application. AAPA will return a copy of this form as an acknowledgement of receipt of your entry. Please fill it out, mail it in with your entry, and it will be returned when your entry has been received.

PROJECT NAME: San Pedro Bay Ports Clean Air Action Plan

CATEGORY: Comprehensive Environmental Management

PORT: Port of Long Beach and Port of Los Angeles

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PERSON TO RECEIVE AWARD: Robert Kanter, Ph.D. (Port of Long Beach) and Ralph Appy, Ph.D (Port of Los Angeles)

AAPA may post my application summary on its website (Check One) X **YES** _____ **NO**

AAPA may post my complete application on its website (Check One) X **YES** _____ **NO**

ENTRY CHECKLIST

1. Determine appropriate award category
2. Follow application guidelines
3. Mail or email your one-page application summary and your full application
4. Send your entry fee of $65, made payable to "American Association of Port Authorities," with this entry form to:

   Meredith Martino
   Environmental Awards Program
   American Association of Port Authorities
   1010 Duke Street
   Alexandria, VA 22314-3589

5. Do observe the June 15, 2007, deadline

DATE RECEIVED _____ **AAPA INITIAL**_____

San Pedro Bay Ports Clean Air Action Plan

SUMMARY

2007 American Association Port Authorities
Environmental Awards Competition
Comprehensive Environmental Management

The Port of Long Beach and the Port of Los Angeles, together as the San Pedro Bay Ports, (SPBP) is submitting the SPBP Clean Air Action Plan (CAAP) as a candidate for the American Association of Port Authorities (AAPA) 2007 Environmental Awards Competition for consideration under the Comprehensive Environmental Management category. Adjacent to each other, the SPBP are the two largest container seaports in the U.S. and combined are the fifth busiest in the world, handling 40% of all waterborne containerized U.S. trade, worth more than $260 billion per year. The goods movement activities of ships, trucks, trains, cargo-handling equipment, and harbor crafts at the Ports are major sources of air pollution. Air emissions of top concern include nitrogen oxides (NOx), a contributing component of smog, and diesel particulate matter (DPM), which increases health risks in local communities. The CAAP is a cooperative, sweeping, aggressive strategy to significantly reduce the health risks posed by air pollution from port-related sources.

The Ports recognized the importance of taking action to protect human health by reducing port related air emissions, and voluntarily partnered, developed and implemented this plan. For the first time ever, the Ports established uniform air quality standards at three key levels, the San Pedro Bay level, Project Specific level, and Source Specific Performance level. In five years under the CAAP, DPM from all port-related sources are estimated to be reduced by a total of 1,200 tons per year and NOx emissions are estimated to be reduced by 12,000 tons per year.

The CAAP will result in significant environmental benefits, which have been achieved cost-effectively and creatively through partnerships with port tenants, regulatory agencies, and the community.

San Pedro Bay Ports Clean Air Action Plan

2007 AMERICAN ASSOCIATION OF PORT AUTHORITIES ENVIRONMENTAL AWARDS COMPETITION
Comprehensive Environmental Management

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I. Introduction

The Port of Long Beach and the Port of Los Angeles, together as the San Pedro Bay Ports (SPBP), is submitting the Clean Air Action Plan (CAAP) as a candidate for the American Association of Port Authorities (AAPA) 2007 Environmental Awards Competition for consideration under the Comprehensive Environmental Management category.

The CAAP describes the measures that the Ports of Los Angeles and Long Beach will take toward greatly reducing emissions related to port operations. The CAAP is designed to develop mitigation measures and incentive programs necessary to reduce air emissions and health risks while allowing port development to continue. The Ports are determined to accelerate ongoing efforts to reduce air pollution from all modes of port-related goods movement throughout the local region.

II. Goals and Objectives

The CAAP establishes the path by which the targeted measures will be implemented. The principles upon which the CAAP is based set forth extremely ambitious goals for port-related goods movement. The CAAP provides for the SPBP to expeditiously and consistently reduce the public health risk associated with port-related mobile sources . It implements a program that within five years will achieve this goal while committing to facilitate growth in trade and development at the ports and reducing air emissions. It is the SPBP's objective to achieve these goals by establishing consistent standards at three levels: (1) the San Pedro Bay level, (2) Project Specific level, and (3) Source Specific Performance level.

The measures implemented under the CAAP are expected to eliminate more than 50 percent of diesel particulate matter (DPM) emissions from port-related sources within the next five years,

significantly reducing associated health risks. Smog-forming nitrogen oxide (NOx) emission reductions will also result in the decline of other harmful air emissions such as sulfur oxides (SOx). By the end of the five-year implementation timeframe, emissions from heavy-duty truck diesel particulate matter will be reduced by approximately 80%, from ocean-going vessels by approximately 35%, and from cargo-handling equipment by approximately 19%. NOx emissions will be reduced by more than 12,000 tons per year, and combined DPM emissions will be reduced by 1,200 tons per year.

III. Discussion

A. Background

The SPBP comprises a huge regional and national economic engine. The Port of Long Beach and the Port of Los Angeles are the two busiest seaports in the U.S.; combined, they are the fifth busiest seaport in the world, handling 40% of all waterborne containerized U.S. trade worth more than $260 billion per year. Economic forecasts suggest that the demand for container movement will more than double by the year 2020. Ships, trucks, trains, and other diesel-powered equipment and harbor craft at the Ports are major sources of air pollution. Air pollutants of top concern include NOx, a contributing component of smog, and DPM, which increases the health risk in local communities. Currently, the South Coast Air Basin (SoCAB) where the Ports are located, is non-compliant with federal and state ambient air quality standards for ozone and particulate matter and has some of the worst air quality in the nation.

Both Ports recognize that in order to reverse this situation and protect public health, they need to take immediate and aggressive steps toward reducing air emissions. The CAAP was formulated out of this recognized need. The CAAP is a joint venture between the Port of Long Beach and the Port of Los Angeles in cooperation with the Environmental Protection Agency

Region 9 (EPA Region 9), California Air Resources Board (CARB), and South Coast Air Quality Management District (SCAQMD). Each group has worked together to develop the scope of this plan.

The CAAP is the first of its kind in the country, linking emissions reduction efforts & vision between the two largest ports in the United States, and joining the similar efforts of the regulatory agencies charged with ensuring improved air quality compliance**.** The CAAP sets forth an array of approaches that can achieve the goals and implement the strategies that the Ports will use to reduce the public health risk from port-related activities.

The CAAP is based on the following principles:

- The SPBP will work cooperatively to implement strategies outlined;
- The CAAP, built upon past efforts, will be continually updated and improved;
- The SPBP will be open to new technologies and other advancements to accelerate meeting the ports' goals for clean air;
- The SPBP will achieve an appropriate fair share of necessary pollutant emission reductions.

The CAAP was designed with the following seven elements:

- Standards and Goals;
- Implementation Strategies;
- Control Measures;
- Technology Advancement Program;
- Infrastructure & Operational Efficiency Improvements Initiative;
- Estimated Emissions Reductions;

- Estimated Budget Requirements.

B. Objectives and Methodology

The CAAP focuses on five primary elements to achieve the necessary emission reductions set forth in the plan:

- Source specific control measures for existing operations;
- Standards for new leases and lease-renewal negotiations;
- Requirements for construction equipment;
- Comprehensive Technology Advancement Program (TAP) initiative;
- Infrastructure and operational efficiency improvements initiative.

These primary elements are detailed further in the following section.

C. Fulfillment of the Award Criteria

1. Benefits to the Environmental Quality

The CAAP encompasses a wide range of air quality benefits which will help reduce harmful emissions from port-related activities.

a. Source Specific Control Measures

Control measures have been developed for each of the following source categories: Heavy-Duty Vehicles, Ocean-Going Vessels, Cargo-Handling Equipment, Harbor Craft, and Railroad Locomotives. The control measures for each source category are described in detail below.

Control Measures for Heavy Duty Vehicles (HDV)

- SPBP-HDV1 - Performance Standards for On-Road Heavy-Duty Vehicles. The control measure is focused on maximizing the reductions from frequent (7 or greater calls per

week) and semi-frequent (less than 7 to 3.5 calls per week) caller trucks that service both Ports. This control measure sets forth the following "clean" truck definitions:

- All frequent caller trucks, and semi-frequent caller container trucks model year (MY) 1992 and older will meet or be cleaner than the EPA 2007 on-road emissions standard and the cleanest available NOx at the time of replacement.
- Semi-frequent caller container trucks MY1993-2003 will be equipped with the maximum CARB-verified emissions reduction technologies currently available.
- The measure then sets target dates by which trucks will either be replaced or retrofitted to meet the above standards.

o SPBP-HDV2 - Alternative Fuel Infrastructure for Heavy-Duty Natural Gas Vehicles. Construction of a liquid natural gas (LNG) or compressed natural gas (CNG) refueling station, preferably on jointly owned property.

Control Measures for Ocean-Going Vessels (OGV)

o SPBP-OGV1 – OGV Vessel Speed Reduction (VSR). Currently a voluntary program under which ships are slowed within the SoCAB over-water boundary 20 nautical miles (nm) out from Point Fermin, reducing NOx emissions. The program will be evaluated to determine effective implementation. One such issue includes expanding the exiting range to 40 nm.

o SPBP-OGV2 – Reduction of At-Berth OGV Emissions. Each Port will develop the infrastructure required to provide shore power capabilities to all container and cruise ship berths. The Port of Los Angeles expects to install shore power infrastructure at 15 berths over the next five years. The Port of Long Beach expects to install shore power infrastructure at 10-16 berths over the next five years.

- SPBP-OGV3 – OGV Auxiliary Engine Fuel Standards. This measure would phase in the use of ≤ 0.2% Sulfur Marine Gas Oil (MGO) fuels in auxiliary engines with initial implementation driven by lease requirements and, potentially, tariffs.
- SPBP-OGV4 – OGV Main Engine Fuel Standards. This measure would require ships' main engines to operate using ≤ 0.2 Sulfur MGO fuels within 40 nm of Point Fermin.
- SPBP-OGV5 – OGV Main and Auxiliary Engine Emissions Improvements. This measure focuses on reducing DPM, NOx, and SOx emissions from OGV main engines and auxiliary engines. This measure is coupled with the Technology Advancement Program (TAP) by incorporating successfully demonstrated technologies, or technologies that have sufficient data that it can be agreed upon by regulatory agencies and the Ports as to what emissions reductions levels can be achieved with the technology.

Control Measures for Cargo-Handling Equipment (CHE)

- SPBP-CHE1 – Performance Standards for CHE. This measure sets fuel-neutral purchase requirements for CHE starting in 2007. The focus is to move the yard tractor fleet to either the cleanest available diesel or alternative fuel engines meeting the EPA on-road 2007 or Tier IV PM and NOx standards. By 2010, all yard tractors operating at the Ports will have these clean engines. All remaining CHE less than 750 horsepower (hp) will meet-at a-minimum the 2007 or Tier IV standards for PM and NOx by 2012. Finally, the measure calls for all remaining CHE greater than 750 hp to meet Tier IV standards for PM and NOx by 2014, and prior to this date, they must be equipped with the cleanest available Verified Diesel Emissions Controls (VDEC).

Control Measures for Harbor Craft (HC)

- SPBP-HC1 – Performance Standards for HC. This measure continues the various engine replacement programs led by SPBP, CARB, SCAQMD, and others. The focus will be to replace with Tier 2 engines with retrofits or Tier 3 engines, once available, on harbor crafts that have not been repowered/retrofitted already. This measure is fuel neutral. Potential vessel candidates will be identified through the annual emissions inventory process, and the program will be implemented through grant programs.

Control Measures for Railroad Locomotives (RL)

- SPBP-RL1 – Pacific Harbor Line (PHL) Rail Switch Engine Modernization. It is a voluntary program initiated by the SPBP, in conjunction with PHL, to modernize switcher locomotives used in Port service to meet Tier 2 locomotive engine standards and initiate the use of fuel emulsion in those engines. The program also includes evaluation of alternative-powered switch engines including LNG and hybrid locomotives. This measure restricts future purchase to the cleanest locomotives available.
- SPBP-RL2 – Existing Class I Railroad Operations. The goal of this measure is to secure an agreement (MOU) with the Class I railroads, and use other contractual mechanisms- to reduce emissions from the existing operations on Port properties that do not have a CEQA action pending in the next five years. This measure lays out stringent goals for switcher, helper, and long haul locomotives operating on Port properties. By 2011, all diesel-powered Class I switcher and helper locomotives entering Port facilities will be 90% controlled for PM and NOx, will use 15-minute idle restrictors, and after January 1, 2007, will use Ultra Low Sulfur Diesel Fuels (ULSD). Starting 2012, and fully implemented by 2014, the fleet average for Class I long haul locomotives calling at Port

properties will be Tier III equivalent PM and NOx and will use 15-minute idle restrictors. Class I long haul locomotives will operate on ULSD while on Port properties by the end of 2007.

- o SPBP-RL3 – New and Redeveloped Rail Yards. Rail facilities include many emission-producing activities, including the operation of switching and line-haul locomotives, the idling of switching and line-haul locomotives, and the loading and unloading of railcars by CHE and HDVs servicing the yards. New rail facilities, or modifications to existing rail facilities located on Port property, will incorporate the cleanest locomotive technologies, meet the requirements specified in SPBP-RL2, utilize "clean" CHE and HDV, and utilize available "green container" transport systems.

b. Construction Activities

Construction activity emissions will be assessed through the CEQA evaluation process. Control strategies that may be required to meet CEQA mitigation requirements will be incorporated in bid packages for the actual construction work. Construction equipment includes marine and land sources. They will be expected to meet the control strategies that may be required as mitigations in the CEQA document. A list of Best Management Practices (BMP) associated with construction activities will be developed by the end of 2007.

c. Technology Advancement Program (TAP)

The CAAP's TAP is an integrated component that will evaluate, demonstrate, pilot, and incorporate new strategies and technologies into control measures. This will ultimately result in significant reductions of DPM and other criteria pollutants. There are four fundamental areas in which this program will focus its initial studies. They are (1) Specific Control Measure Requirements, (2) Green Container Transport Systems, (3) Emerging Technology Testing, and

(4) Emissions Inventory Improvements. Specific Control Measure Requirements are aimed at the evaluation, demonstration and testing of specific control measures identified in the CAAP. The Green Container Transport Systems is focused on finding the next generation of transport solution for goods movement. This includes renewable energy technologies, hybrid technologies, and broadening the use of electrification in port-related sources. The Emerging Technology Testing portion of the TAP is to facilitate testing of emerging technologies that can be used to reduce emissions associated with port-related activities (OGVs, HDVs, CHE, HC, and RL.) The Emissions Inventory Improvements program will focus on increasing the accuracy of the key monitoring and tracking element which is the emissions inventory.

d. Infrastructure & Operational Efficiency Improvements Initiative

This initiative identifies projects at the SPBPs that improve infrastructure and operational efficiencies that have an added air quality benefit. The initiative includes, but is not limited to:

- Focus on On-Dock vs. Near-Dock Rail Infrastructure;
- Grade Separations;
- Optical Character Recognition (OCR) gates at terminals;
- Terminal Cargo Handling/Configuration Efficiency Improvements;
- Radio Frequency Identification (RID);
- Virtual Container Yards.

The emissions reduced by these projects would be quantified and reported in emissions inventory updates.

2. Independent Involvement and Effort by the SPBP

The adoption of the San Pedro Bay Ports CAAP demonstrates an unprecedented commitment to fostering and using innovative technology to improve the air quality of the Los Angeles South Coast Region. The CAAP is groundbreaking in that its goals are not mandated by federal or state regulation. The control measures set forth in this CAAP go well beyond existing regulatory requirements (none are mandated as part of regular port operations). The Ports recognized the importance of taking action and voluntarily partnered, developed and implemented this plan. It is ambitious, comprehensive and forward-thinking for a local organization to initiate such an undertaking and self-regulate in this manner. The Ports will work with tenants and the railroads to assist them in developing their own programs to meet the CAAP standards. The Ports are committed to working with industry stakeholders to assure speedy action.

3. Program Creativity

As the CAAP is put into practice, several implementation strategies will be utilized to maximize the reduction of public health risk, criteria pollutant mass emissions reductions, and meet the stated goals. Implementation will adapt so that strategies may be added, changed, or abandoned based on the experience that will be built up as the CAAP moves forward. Since the control measures go beyond existing regulatory requirements, it would seem that there is little the Ports can do to forcefully require tenants to implement the requirements of the CAAP. However, the Ports have evaluated numerous implementation strategies for the proposed standards, extensively reviewed options, and evaluated several scenarios. The strategies the Ports have evaluated to date to implement the CAAP are: (1) Lease Requirements, (2) Tariff Changes, (3) CEQA Mitigations, (4) Incentives, (5) Voluntary Measures, (6) Credit Trading, (7) Capital Lease Backs, (8) Government-Backed Loan Guarantees, (9) Third Party Discount

Leasing/Purchasing, (10) Franchises, (11) Joint Powers Authority Trucking Entity, (12) Environmental Mitigation Fee, and (13) Recognition Program.

4. Program Results

Below are the estimated emissions reductions that will be achieved within the FY 2007-2011 period by implementing the control measures affecting HDV, CHE, and OGV. The estimates represent reductions from the amount of emissions that would have been emitted in the absence of the corresponding control measures. Emission reductions associated with HDVs, CHEs, and OGVs will result in more than a 50% reduction in diesel particulate matter (DPM) emissions, over 45% reduction in NOx, and greater than a 35% reduction in SOx. By the end of the five-year implementation timeframe, emissions from heavy-duty truck diesel particulate matter are estimated to be reduced by approximately 80%, from ocean-going vessels by approximately 35%, and from cargo-handling equipment by approximately 19%. NOx emissions are estimated to be reduced by more than 12,000 tons per year and combined diesel particulate matter will be reduced by 1,200 tons per year.

5. Program Cost Effectiveness

The CAAP control measures and programs primarily mentioned will help achieve a significant reduction in air emissions of NOx, SOx, and DPM. The CAAP measures are primarily based on performance standards to allow flexibility by the port industry to meet those standards. This flexibility allows the port operators to choose strategies that are the most cost-effective and best fit their business needs while achieving the port's clean air goals. In addition, the TAP will introduce new technologies that will provide a greater number of options for meeting the performance standards.

6. Transferability of the Program to the Port Industry

The CAAP can be adapted for other AAPA ports. Modified versions of the programs and policies can be implemented based on a particular port's needs. Although the CAAP was developed by the Port of Long Beach and the Port of Los Angeles staff in collaboration with regulatory agencies to address local needs, all port facilities, to various degrees, share common air pollution problems faced by this region. It is important for large facilities, like ports, to have a policy that guides long term environmental policies. Since the CAAP was designed to incorporate a multitude of air emission reduction methodologies, it can be easily transferred to other ports.

IV. Conclusion

The Ports recognize that their ability to accommodate the projected growth in trade depends upon their ability to address adverse environmental impacts that result from such trade; the CAAP was developed to address this concern. The CAAP is the first of its kind in the country, linking the emissions reduction efforts and visions of the two largest Ports in the United States with the similar efforts of the regulatory agencies in charge of ensuring air quality compliance for the region. The partnership will help improve overall air quality in the SoCAB. More importantly, it will reduce emissions and associated health risk for residents and employees that live and work in the areas surrounding the Ports. By the end of this five-year period, important strides in the reduction of air emissions will be accomplished, and it will continue to be a model in environmental leadership as programs of this caliber become standard at ports across the nation.