

# Port of Long Beach

## Green Port Policy

2006 AAPA Comprehensive Environmental Management  
Awards Competition



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May 31, 2006

# Green Port Policy of the Port of Long Beach

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## **I. Introduction**

The Port of Long Beach (Port) is submitting the Green Port Policy as a candidate for the American Association of Port Authorities (AAPA) 2006 Environmental Awards Competition for consideration under the Comprehensive Environmental Management category.

The Port of Long Beach is committed to improving the environment, as demonstrated by its 20-year record of environmental protection programs. With the Port's rapid trade growth in recent years, the Port recognizes the need for a more aggressive, comprehensive and coordinated approach to reduce the negative impacts of Port operations. In response to this need, the Port developed the Green Port Policy, which was adopted by the Board of Harbor Commissioners in January 2005.

## **II. Goals and Objectives**

The Green Port Policy is based upon five guiding principles:

- to protect the community from harmful environmental impacts of Port operations;
- to employ the best available technology to avoid or reduce environmental impacts;
- to promote sustainability;
- to distinguish the Port as a leader in environmental stewardship and compliance;
- to engage and educate the community.

In addition, the Green Port Policy includes six basic program areas, and established an overall goal for each. The goals for each program area are as follows:

- Air: to reduce harmful air emissions from Port activities
- Soil/Sediment: to remove, treat or render suitable for beneficial reuse contaminated soils and sediments in the Harbor District
- Wildlife: to protect, maintain or restore aquatic ecosystems and marine habitats
- Water: to improve the quality of Long Beach Harbor waters

- **Community Engagement:** to interact with and educate the community regarding Port operations and environmental programs
- **Sustainability:** to implement sustainable practices in design and construction, operations and administrative practices throughout the Port

In addition to the Green Port Policy's overall principles and the goals for each component, the policy includes metrics (measurements of the Ports environmental progress) and a commitment to regular reporting.

### **III. Discussion**

#### **A. Background**

The Port of Long Beach is one of the world's busiest seaports and is the second busiest container port in the United States, with over 6.7 million twenty-foot equivalent units (TEU) moving through the Port in 2005. The Port, which is a leading gateway for trade between the United States and Asia, is located in a region characterized as having some of the nation's worst air quality.

In 2002 the Port established its Healthy Harbor program to manage its various environmental programs and practices. The Port has since recognized that the Healthy Harbor program, while significant, lacked a unified policy and a clear statement of the environmental ethic needed to guide Port development and operations. In November 2004 the Board of Harbor Commissioners directed the Port to develop a new, improved policy that would encompass wide-ranging environmental goals. This Green Port Policy, which the Board adopted in January 2005, serves as a guide for decision making, and established an overall environmental ethic for the Port of Long Beach, placing environmental protection of air, soil, sediment, and water under a single umbrella and establishing them as a top priority.

## **B. Objectives and Methodology**

The objective of the Green Port Policy is to provide environmental guidance for decision making that the Port can use to help achieve and maintain environmentally responsible development and operations. These objectives are defined in the five guiding principles, as stated above. The methodology of the Policy calls for programs to be developed and implemented that help to achieve the program area goals, through the various tools that the Port has available, including the establishment of environmental covenants in new and amended leases, incentives to encourage participation in Green Port Programs by Port tenants, the development of new technology to reduce the impacts of port operations on the environment, and greater outreach and communication to the surrounding communities. Further, the Policy calls for specific metrics to be established for each program area so that progress toward the goals can be measured and reported to the Board and the public on a quarterly and annual basis.

## **C. Fulfillment of the Award Criteria**

### ***1. Benefits to the Environmental Quality***

The Green Port Policy encompasses a wide range of environmentally beneficial programs. Examples of programs implemented under the Green Port Policy are detailed in the following sections.

#### **a. Air Quality**

The Vessel Speed Reduction (VSR) Program encourages vessels arriving and departing from the Ports of Long Beach and Los Angeles to reduce their speed to 12 knots within a distance of 20 nautical miles from the breakwaters. In order to increase participation, the Board of Harbor Commissioners approved the Green Flag program in 2005, with a budget of over \$2.2 million per year to provide green flags to vessels that are 100% compliant with the

VSR program and provides financial incentives to carriers with 90% program compliance. Compliance at the end of 2005 was determined to be 65%. With implementation of this program, compliance has increased to approximately 80% by March of 2006. The program's goal is to achieve 100% compliance by June of 2006. At that level NO<sub>x</sub> emissions from ocean-going vessel main engines at the Port would be reduced by up to 1.5 tons/day or XXX tons/year.

The Port is also pursuing projects to reduce emissions from vessels at berth through cold-ironing. Auxiliary generators on hotelling vessels produce about one-third of the air emissions from ocean-going vessels. The Port's goal is for 100% cold-ironing at container terminals. Environmental measures have been included in new leases consistent with the Green Port Policy. In May 2006, the Port approved two leases with Stevedoring Services of America/Matson (SSA) and International Transportation Service/K-Line (ITS), which, over the term of their leases, requires 100% of vessels to cold-iron or achieve 90% of emission reductions at berth.

The Diesel Emission Reduction Program provides funding and technical support for the installation of diesel oxidation catalysts (DOCs) and the use of emulsified or ethanol-blended diesel fuels on cargo handling equipment (CHE) in Port terminals. DOCs reduce particulate matter emissions by 25%, and when used with alternative diesel fuel they can reduce particulate by 50% and NO<sub>x</sub> by 20%. Over 600 DOCs have been installed on CHE and over 300 units are being fueled on emulsified or O<sub>2</sub> diesel.

For the Terminal Equipment Replacement Program, the Port uses lease negotiations to facilitate the early conversion of terminals' CHE fleets to cleaner-burning on-road or Tier 4-compliant diesel engines. Although new state rules mandate the eventual phase-out of existing off-road engines and their replacement with engines meeting stricter standards, the Port's goal

is to ensure that CHE on the Port's terminals attain future emissions requirements earlier than mandated by law. The Port has been implementing this measure through lease requirements, and provisions for terminal equipment fleet turnover were incorporated in the recent SSA and ITS leases.

The LNG Yard Hostler Pilot Project involves the deployment of three liquefied natural gas (LNG)-powered yard hostlers on a container terminal to measure their emissions benefits and evaluate costs and operational characteristics. The project will help determine the feasibility of using LNG-powered equipment in a container terminal duty cycle. If feasible, LNG would represent a new emission reduction strategy for cargo-handling operations.

The Pacific Harbor Line (PHL) Locomotive Replacement project utilizes funding from the Ports of Long Beach and Los Angeles to replace its locomotive fleet with cleaner locomotives equipped with idling controls. Replacement is to be completed by April 2007; future locomotive purchases will exceed current EPA and state emissions standards. Replacing the PHL fleet with new, cleaner locomotives that have idling controls and burn cleaner fuel will reduce NOx emissions by over 200 tons per year and diesel PM by nearly six tons per year.

The Port's Rideshare/Carpool Program provides pool vehicles to support carpooling by staff or financial incentives for staff who use their own vehicles. Increased carpooling reduces traffic congestion and air pollution.

The Harbor Department Green Fleet Program, adopted by the Board in March 2006, identifies opportunities to use alternative fuels, purchase cleaner vehicles and equipment, and install engine retrofits in the Port's small but diverse fleet of light-duty and heavy-duty vehicles and equipment. Currently, Maintenance uses two LPG-fueled street sweepers, one man-lift fueled by LPG, and one CNG security patrol cars and is fueling 38 diesel-powered vehicles and

equipment with O<sub>2</sub> diesel fuel. Engineering has purchased four hybrid Ford Escapes. Future purchases of vehicles must meet cleaner emissions standards.

The 2002 Port of Long Beach Emission Inventory will be updated annually beginning with the 2005 Inventory, currently being developed by the Planning Division. The update involves collecting equipment and activity data from terminals, railroads, and vessel operators, then calculating emissions using agency-approved models. The new inventory and its updates will support future emission reduction strategies, regulatory interactions, and metrics for tracking Green Port progress.

b. Water Quality

The Port administers and implements the Storm Water Program and the NPDES industrial storm water permit on behalf of all its tenants and also administers the City's industrial, construction, and municipal permits within the Harbor District. Sampling data enable staff to assess the potential impacts of Port operations on water quality. Staff is testing several remote, automatic sampling devices in storm water discharge pipes in an effort to improve sample collection at difficult-to-reach stations. The Port received a U.S. EPA award in 2001 and a Water Board award in 2002 for its program.

For Storm Water Design Best Management Practices, the Port proactively responding to future regulations by incorporating treatment strategies into current terminal design projects. Through careful terminal design, the Port seeks to control and treat storm water runoff from paved terminal areas so as to minimize input of pollutants into harbor waters. The new terminals planned for Pier S, Pier G, and the Middle Harbor are being designed to exceed current regulations by including various forms of on-site storm water treatment.

The Port's Stormwater and Dust Control Program identified 150 acres of undeveloped Port properties that pose a potential impact to storm water or emit fugitive dust and



implements best management practices at those locations. In 2005 the Board of Harbor Commissioners approved \$4.5 million dollars to fund this program. Interim dust and storm water control measures have been implemented on approximately 95% of the property.

The Dredge Monitoring/Assessment Program requires the Port to conduct water quality monitoring during dredging activities to detect adverse impacts. Monitoring ensures compliance with applicable permits and standards, and allows the Port to take corrective action if potential adverse impacts are detected.

The Port conducts Long-Term Groundwater Monitoring in areas of known or suspected ground water contamination left by past oil production and other industrial activities. Although groundwater in the harbor area has been excluded by the State as a drinking water resource, its contamination is nevertheless an environmental concern.

c. Wildlife

The Biological Baseline project is a Port commissioned harbor-wide, year-long survey of biological conditions in benthic habitats (bottom sediments), the water column, and hard substrates (breakwaters and pilings). A survey of the bird life in the harbor is also conducted. Occasionally, focused surveys concentrate on limited areas of the harbor. This program's goal is to collect and make available information about the health of harbor ecosystems to support decisions about port development projects and required mitigation as well as to support the Port's stewardship role. The Port is currently preparing a 5-year follow up to the Biological Baseline Study, to be conducted in 2006 and 2007.

The Black-Crowned Night Heron Relocation project began in 1998 when the Port relocated 50 trees from the former Naval Station to Gull Park to serve as nesting habitat. The area continues to be maintained and the site is regularly monitored for use by the herons. The program seeks to maintain one of the largest colonies of this bird, which is protected by federal

and state law, in Southern California. The Port recently completed the seventh year of monitoring the results of the relocation project.

The Ballast Water Management Program supports federal and state programs that promote open-ocean ballast water exchange. The Port's role is primarily that of education and outreach to ensure that the international vessels calling at our Port comply with existing requirements. By supporting federal and state programs the Port will help to minimize releases of invasive species into the San Pedro Bay ecosystem. The Port also conducts pre-dredge surveys for the presence of a specific invasive species.

d. Soils and Sediments

The Port has a General Soil Cleanup program due to the existence of soils at sites in the Port that are contaminated as a result of historical activities, including military uses and oil field activities. The Port characterizes contaminated soils encountered in the course of development to ensure that contaminated soils are safely handled and are re-used or disposed in an environmentally responsible manner.

The Brownfield Controls project establishes "institutional controls" that prevent improper land use, such as schools or hospitals, and ensures proper protection and notifications. Institutional controls protect the public from contact with contamination in soils and groundwater.

Sediments encountered in the course of development are sampled and appropriately managed. Sediments posing a risk to the marine environment are safely removed, handled, and re-used or disposed in an environmentally responsible manner.

The West Basin Cleanup project, between 1998 and 2004, in the course of development of Pier T, sequestered approximately 1,500,000 cubic yards of contaminated sediments in a port landfill and in the dry docks at the former Naval Shipyard. As much as 1 million additional cubic

yards of contaminated sediments remain to be cleaned up under the oversight of the Navy and regulatory agencies. The project will ensure that contaminated West Basin sediments are safely handled and re-used or disposed in accordance with the established cleanup goals. Cleaning up the West Basin will render it largely unrestricted as to use and make it a healthier environment for marine organisms.

The Hazardous Materials Surveys and Removal program requires that the Port, prior to remodeling or demolition of a structure, evaluate the necessity for conducting a survey for asbestos, lead-based paint, PCB-containing transformers, and other hazardous materials, and conduct the appropriate hazardous materials removals. The program ensures that workers coming into contact with Port structures are not exposed to hazardous materials.

e. Sustainability

The Port's Sustainability Task Force promotes Port policies and procedures that ensure ecological health, economic vitality, and community integrity. The Task Force includes at least one member from each Harbor Department Division. A smaller steering committee guides the Task Force while evaluating the proposed programs. The goal is to make sustainability a culture at the Port by developing organizational practices of environmental protection and enhancement. Benefits will include reduction of pollution, energy use, and waste generation; implementation of green building policies; reduction of the Port's ecological footprint; and the increased use of renewable and recyclable materials. The Task Force and the Steering Committee meet monthly and have developed "mission", "vision", and "values" statements. On October 10, 2005 the Task Force gave a presentation of its program to the Board of Harbor Commissioners and the Board approved \$874,000 these activities.

As a part of the Sustainability Task Force's efforts, the Port will participate in the AAPA Environmental Management System (EMS) program, using the Development Bureau purchasing

functions as the proposed “fence line”, as a precursor to other port applications of EMS. The benefits of EMS will include improved operations control, better emergency response, reduced costs, environmentally responsible decision-making, and better relationships with regulators and the public. The Port’s application to AAPA was developed and submitted in October 2005.

The Port’s Training and Outreach component of the sustainability element includes production of a training video and training program for Port staff, management, and Commissioners, development of an informational website, and publication of a sustainability newsletter. The goals are 1) to increase Port staff’s awareness of sustainability principles in order to integrate the sustainability ethic into Port development and operations; and 2) to inform tenants and the public about the Port’s commitment to sustainability and the actual measures being taken to implement the sustainability program. Project management teams have been established for the website, training video, training program development and implementation, tenant program evaluation, and the sustainability newsletter “Greenprint”.

The Port’s Action Plan/Implementation Work Plan involves the preparation of guidance documents that will direct the integration of sustainability principles into Port development and operations and describe how the sustainability initiative will be managed. The goal is to provide a clear vision of how the principles of sustainability will be developed and incorporated into the Port’s operations both in the near term (1-5 years) and the long term (to 2025).

The Truck Trip Reduction Program is supported by the ports of Long Beach and Los Angeles and the Alameda Corridor Transportation Authority (ACTA). The program calls for the development of a Virtual Container Yard (VCY) and a local shuttle train for Inland Empire-bound cargo, promoting extended gate hours at terminals (Pier Pass) and increased use of on-dock rail, and supporting a new near-dock intermodal yard and a new truck route (SR 47) from Terminal Island. Although these projects are intended primarily to relieve traffic congestion on

the I-710 freeway and major local arterials, they will have the added benefit of reducing diesel emissions from trucks because they will reduce the number of trucks on area roads as well as the amount of idling and delay time that trucks experience. Pier Pass became operational in July 2005 and has already increased off-peak truck activity to 35% of all truck trips, from less than 15%.

f. Community Engagement

The Port held the first annual Green Port Open House in October 2005, showcasing the Port's Green Port programs. Approximately 2,000 people attended, including local community members, the mayor, city council members, and major press. The second Green Port Open House will be held in October 2006, again highlighting the Port's Green Port Programs, and providing an update of progress since the last open house. By engaging and educating the community and Port employees, staff hopes to improve the Port's relationship with the community and ensure that the community is aware of the steps being taken to mitigate impacts and improve Long Beach's environment.

The Goods Movement Academy is an exploratory program that comprises a curriculum element that educates LBUSD students (K-12) and CSULB students about the goods movement industry and careers within. The program would prepare the next generation of employees in the goods movement industry, expose students to new life choice possibilities, and create a sense of appreciation of the port industry in those students and their families.

The Port developed a Green Port Brochure that presents a short summary of the Green Port policy and programs. Widespread distribution of this informative brochure will educate a broad audience concerning the Port's environmental initiatives. In addition, the Port developed the first annual Green Port Annual Report in May 2006, highlighting programs that have been

implemented under the Green Port Policy and identifying progress toward meeting the Green Port Policy Goals.

The Long Beach Tree Project is part of the Urban Reforestation Plan that focuses on planting mature trees along the stretch of the I-710 within the City of Long Beach. The program seeks to improve air quality, reduce noise pollution, abate graffiti, and enhance aesthetics. "Harbor Arbor" Day was held in April of 2006, as the kick-off event for the program.

## ***2. Independent Involvement and Effort by the Port of Long Beach***

The Green Port Policy was independently developed by the Port of Long Beach out of the recognition that, although there were significant environmental programs in place, the programs did not constitute policy and could not be considered the guidance or ethic by which the Port is developed and operated. Based on this recognition, the five principles of the Green Port Policy were drafted by Port staff and presented to the Board of Harbor Commissioners for adoption. Existing programs were reviewed to ensure they were consistent with the five principles of the Green Port Policy and new programs are continually developed. The Green Port Policy and the programs that are implemented are not required by any environmental agency or regulatory requirement. The Port developed the Policy to take a proactive approach to reducing the impacts of the Port on the environment, on wildlife, and on the surrounding communities. The Port is making an aggressive effort to reduce its environmental footprint while at the same time meeting the economic and development needs of the region.

## ***3. Program Creativity***

The Port's Green Port Policy provides an opportunity for the Port to make creative partnerships with tenants, third-party equipment manufacturers and vendors, regulatory agencies, and the community in addressing environmental impacts from the Port and Port-related operations. The Port uses its partnerships to developing beneficial environmental

programs to mitigate impacts in a multitude of ways. Because the wide-ranging goals of the Policy, creative methods to reduce environmental impacts have been initiated at the Port.

#### **4. Program Results**

The Green Port Policy has resulted in environmental benefits that are real, quantifiable, contemporaneous and permanent. Most of the benefits are also enforceable as Port-tenant lease language generally incorporates requirements based on applicable Green Port Policy programs. To date, the Port has reduced air emissions, including NO<sub>x</sub> and diesel particulate matter, significantly. For cargo handling equipment specifically, 2005 emissions were reduced by nearly 600 tons per year of nitrogen oxides and over 70 tons per year diesel particulate matter, as compared to 2002 levels. The Port continues to implement Storm Water Best Management Practices that exceed regulations in order to minimize the amount of pollutants that enter the ocean. The Port has completed sediment clean up operations at several Port sites including the West Basin and Back Channel, with approximately 1.5 million cubic yards cleaned up from the West Basin alone. The Port continues to work to educate vessels calling at the Port of Long Beach to comply with open-ocean ballast water exchange to help to minimize releases of invasive species into the San Pedro Bay ecosystem. The Port is also committed to hosting an annual "Open House" where community members can tour the Port and learn about the Green Port Policy. As evident by these results, the Green Port Policy is expected to achieve even greater benefits in the future.

#### **5. Program Cost Effectiveness**

The Green Port Policy is comprised of a multitude of environmentally beneficial programs. New and existing programs are periodically reviewed and reports are provided to the Board of Harbor Commissioners. The reports cover topics ranging from emissions reductions to current status to associated costs and cost benefits. For most of the programs,

cost effectiveness is considered when designing the specifics of the program and during implementation. While there are no figures for cost effectiveness for the overall Green Port Policy, individual programs have proven to be cost effective. Additionally, many programs do not necessarily entail direct costs.

#### ***6. Transferability of the Program to the Port Industry***

The Green Port Policy consists of five principles that can be applied to other AAPA member Ports. Because the programs are not governed by regulatory limitations or specific state or local requirements, modified versions of the programs and policies can be implemented based on a particular port's needs. Although the Green Port Policy was developed independently by Port of Long Beach staff, many of the environmental concerns are shared amongst all Port facilities. It is important for large facilities, like ports, to have a policy that guides long term environmental practices. Since the Green Port Policy was designed to incorporate a multitude of environmentally beneficial programs, it can be easily transferred to other ports.

#### **IV. Conclusion**

The Green Port Policy is an effective and comprehensive program that reduces Port impacts on the environment. The Policy was independently conceived by the Port and encompasses the five guiding principles for the Port's environmental-protection efforts. The Port brought many of its existing environmental programs and projects under the Green Port Policy and continues to develop new programs. All of these programs have resulted in significant environmental benefits ranging from reducing emissions of air pollutants to minimizing and cleaning up water and soil contamination; from protecting wildlife to promoting sustainable development and growth; from working with the community to reduce environmental impacts at the Port to providing educational and job training opportunities. In



addition, the environmental benefits have been achieved using cost-effective approaches and creative methods by involving partnerships with tenants, third-party equipment manufacturers and vendors, regulatory agencies, consultants, and the community. The Green Port Policy is truly an effective and comprehensive program that can provide significant environmental benefits at Ports throughout the industry.