

SETTING THE STANDARD FOR REDUCING PORT-RELATED AIR EMISSIONS

The South Carolina State Ports Authority (SPA) is taking a proactive role in improving air quality in the region. Through voluntary partnerships with government agencies, non-profit organizations, and private companies, the SPA is actively reducing fuel consumption, lowering costs and reducing air emissions from various maritime and transportation sources across the Charleston area. In March 2007, the SPA initiated its efforts by signing a voluntary agreement with the South Carolina Department of Health and Environmental Control (DHEC), designed to reduce port-related air impacts.

Switching to Cleaner Fuels

As part of its agreement with DHEC, the SPA agreed to evaluate the use of cleaner fuels. The SPA, subsequently, **switched to ultra-low sulfur diesel (ULSD)**—three years ahead of the federal mandate. Eight port tenants have also made the switch to ULSD. The SPA also worked with on-site partners, including the Charleston Harbor Pilots and South Carolina Public Railways, to switch to ULSD. This move to cleaner fuel **cut air emissions levels from affected equipment by an estimated 10 percent.**



Design and Operations Standards

A number of design and operations standards are also minimizing air emissions on and around new and existing terminals. Efforts include committing to implement and maintain practices and procedures to meet a target goal of 30 minutes or less “turn time” on average by trucks on site, which will reduce the idling times and air emissions of motor carriers at port facilities. In 2009, **turn times exceeded this goal by averaging 21 minutes**, a 19% percent reduction in turn times from 2005. A target goal of an average of 40 container moves per hour per crane has been set, exceeding the industry average for crane productivity for loading and unloading of containers. Efficient operations decrease the time a ship is at berth, which in turn reduces local ship emissions. Presently, the SPA is exceeding the internal goal with an **average of more than 41 moves per hour per crane in 2009**, a more than 13% improvement over 2005.

Contractor guidelines for bid documents also are ensuring the implementation of best management practices and are minimizing air emissions during the construction of the new port facility. Contractor requirements include:

- All non-road equipment producing between 100 and 750 horsepower will be low emission vehicles that conform to the federal Tier 2 or higher emissions standard
- Diesel engines not active will be turned off, reducing idling
- All equipment and vehicles will be registered and approved prior to commencing work
- A dust control plan will be developed and implemented

First-in-the-Southeast Air Emissions Inventory, Air Monitoring

To further evaluate air emissions on and around the port, the SPA commissioned a **first-in-the-Southeast air emissions inventory**. The completed inventory was released in September 2008 and the results are available online. Boundaries for the inventory were the sea buoy 12 nautical miles from Charleston and the county lines of Berkeley, Dorchester or Charleston County. The emissions inventory provides a baseline of emissions sources and provide information for the evaluation of other possible emissions reduction strategies. Although the results show that port-related emissions account for less than 5% of the total emissions in the tri-county area, the SPA has taken additional measures to further reduce emissions.

continued next page...



Diesel Emissions Reduction Projects

The SPA, the Charleston Motor Carriers Association, the South Carolina Trucking Association, the Charleston Metro Chamber of Commerce, DHEC and the American Lung Association jointly applied for grant funding through EPA to improve trucks in the private sector truck fleet. The **\$1.7 million project**, announced in September 2008, is allocated toward retrofitting over-the-road trucks with new equipment that will reduce air emissions and increase fuel efficiency, as well as repowering on-terminal equipment. This project is scheduled to be completed by the end of June 2010.



The SPA also put together a multi-faceted project aimed at reducing diesel emissions that leveraged extensive public/private partnerships to obtain grant funding under the stimulus package. The **\$3.56 million project**, selected by the EPA is currently retrofitting a local drayage fleet under contract with Evans Delivery Company with diesel oxidation catalysts, as well as providing for the repowering of on-terminal container handlers, two local tug boats owned by Stevens Towing, Co., and a Marinex Construction dredge.

The SPA's projects directly reduce diesel emissions from diesel engines through the use of cleaner fuels, repowers, and retrofits. The SPA has effectively measured the diesel emissions reductions of the grant projects using the EPA's diesel emissions quantifier. It is calculated that for these two projects, **total emissions reductions over the life of the projects will be: 1,966.4 tons of NOx, 86.86 tons of PM, 40.75 tons of HC and 218.73 tons of CO.** Just the portion of the projects to repower and replace cargo handling equipment reduces PM emissions by 49% and NOx emissions by 29%.

In addition, the SPA also assisted Moran Towing of Charleston in obtaining state Diesel Emissions Reduction Act (DERA) funds to subsidize the switch half of its local tug fleet to cleaner fuels, and assisted the South Carolina Trucking Association with utilizing DERA funds to conduct an additional Trucking Rebate Program for idle-reduction (APUs) on more than 50 trucks.

Setting Environmentally Beneficial Operations Standards and Practices

The SPA is implementing an **Environmental Management System (EMS)** through the American Association of Port Authorities (AAPA), EPA and Global Environment and Technology Foundation. Throughout this process, a number of environmental issues including air emissions will continue to be analyzed for more efficient, cleaner operations that can be implemented.

Leading International Efforts to Create Vessel Emissions Standards

The port community is taking a leadership position in regards to reducing air emissions in the industry. The SPA **supported the EPA's proposed new vessel emissions standards** before the International Maritime Organization (IMO). The SPA's resolution, which was passed unanimously by the SPA Board in December 2007, supported the federal government's concordance with MARPOL Annex VI to set limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibit deliberate emissions of ozone depleting substances.

In March 2010, the IMO accepted the proposal to **designate waters off the North American coasts as an Emission Control Area (ECA)**. Large ships that operate in ECAs must use dramatically cleaner fuels which will phase in starting in 2012, ultimately reaching no more than 1,000 parts per million of sulfur content by 2015. Also, new ships must use advanced emission control technologies beginning in 2016, which will help reduce NOx emissions. These new stringent standards will ultimately **reduce particulate matter emissions by 85%, and nitrogen oxide (NOx) emissions by 80%**, according to EPA.

