

January 30, 2008

Port Of Oakland Maritime Air Quality Improvement Plan

Maritime Industry Sample Pro-Active Measures

The Port of Oakland is home to 8 marine terminals that service about 30 major ocean shipping lines. The ships and the equipment on the terminals are usually powered by diesel engines and consequently are sources of diesel particulate matter (PM), Oxides of Nitrogen (NOx) and Oxides of Sulphur (SOx).

The Major Sources

- Cargo Handling Yard Trucks – About 325 yard trucks = 65% of equipment
- Cargo Handling Lifting Equipment – About 175 top picks, side picks, gantries and fork lifts
- Ships – 392 different vessels making over 1,900 port calls (2005)
 - Main Engines
 - Auxiliary Engines
 - Boilers

Every one of these sources is regulated by CARB or EPA, or has CARB or EPA regulations pending (ship main engines and cold ironing). These regulations are very rigorous, as required by CARB's Diesel Risk Reduction Strategy and they leave little room for companies to go beyond state and federal requirements in terms of reduction strategies. Our pro-active options at this point are mostly relegated to complying or going beyond the requirements of the regulations in advance of the scheduled regulatory deadlines, which our industry is making every effort to accomplish.

There are some other opportunities available beyond the requirements laid out by the regulatory agencies, such as through operational best practices that speed the movement of cargo through the port, resulting in reduced engine operations and consequent emission reductions. There are also undoubtedly technologies that will emerge that provide even better emission reductions. These strategies are pursued aggressively as they usually improve efficiencies and reduce costs at the same time as reducing emissions.

Here are a few examples of efforts underway by various companies to reduce emissions in advance of or beyond regulatory requirements.

1. **All Marine Terminals** - The marine terminals at the Port of Oakland are replacing their yard trucks and cargo lifting equipment in an effort to meet, and if possible beat the scheduled regulatory deadlines.
 - 36 % of yard trucks have been replaced ahead of the schedule
 - 33 % of lifting equipment has been replaced ahead of schedule

2. **TraPac Inc.** - Improvements in technology at the terminals have resulted in faster cargo processing, resulting in reduced times that trucks have to wait in line or inside the terminal. As an example, Trapac Inc is in the midst of a \$20 million improvement plan which has already resulted in a 25 percent reduction in truck turn times over the last year, while experiencing a 25 to 30 percent increase in cargo volumes. Less waiting means less truck idling and reduced emissions. Continued improvements should lead to even better truck turn times in the future.
3. **APL Limited** - APL is moving ahead with a shore power retrofit program in conjunction with and assistance from the BAAQMD. The project will provide terminal infrastructure to enable ocean going container vessels to turn off their auxiliary engines and connect to shorepower while at berth, thereby reducing diesel emissions and greenhouse gases. The project scope will include procurement and installation of a substation, underground cabling, connection to the electrical grid and shoreside plugs for two berths. The estimated cost of the project is US\$4 million and is expected to be completed by December 31, 2009

APL plans to have 25% of ship visits plugged in by 2011 (3 years ahead of proposed regulatory requirement), 60% of ships plugged in by 2014 and 90% of ships plugged in by 2020, which is 10% above the proposed regulatory requirement.

4. **A. P. Moller-Maersk** - In December, 2005 A. P. Moller-Maersk sat with the leadership of ARB and advised them they were moving forward with a voluntary initiative to switch fuel in both the main and auxiliary engines on all vessels calling California ports. ARB was already contemplating an auxiliary engine rule which would require switching from Heavy Fuel Oil (HFO) to a distillate of 0.50 percent sulfur/wt 24nm from the Regulated Waters of California (coastline). Maersk told the ARB they would be burning a 0.20 percent sulfur/wt Marine Gas Oil (MGO) in lieu of the 0.50 percent outlined in their proposed regulation. Maersk's initiative for the auxiliary engine mirrored the ARB rule. Their main engine switch would occur 24nm from the port. In April, 2006 Maersk initiated the plan with the Sine Maersk in Los Angeles, CA. This meant Maersk was a full 9 months ahead of the proposed rule from ARB on auxiliary engines while at the same time breaking new ground with respect to the main engine. Since it's inception the fuel switch initiative has accounted for a reduction in NOx of 37.9 tons, SOx of 248.4 tons and PM of 29.7 tons. The sulfur content of the fuel has dropped dramatically from 2.7 percent/wt to our current average of 0.09 percent/wt.

These are representative efforts from a few members who also sit on the MAQIP and are dedicated to improving the environment in Oakland. These companies are involved in other programs, and other companies are following their lead or pursuing other strategies for emission reductions.

If you are interested in obtaining additional information about these projects or other efforts underway by these or other companies, the Port of Oakland Environmental Department can coordinate with their tenants to provide you additional information.