

# Maritime Air Quality Technical Working Group

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**Port of Los Angeles  
San Pedro, California**

December 3, 2003

California Environmental Protection Agency



**Air Resources Board**

## Update on Statewide Marine Measures in the South Coast SIP



## **SCAQMD SIP Approved by Air Resources Board**

- **Approved SIP on October 23, 2003**
- **Incorporates State & Federal Measures into the SCAQMD SIP**
- **Committed to evaluate additional measures by 2004**
- **Adopted Burke amendment - adopt measures by 2008 to achieve additional 97 T/Y**
- **Forward to U.S. EPA in late 2003**



## **Four Statewide Marine Measures**

- Reduce emissions from existing harbor craft
- Reduce port land-side emissions sources
- Adopt more stringent new engine standards
- Reduce emissions from existing oceangoing ships

## **Reduce Emissions From Existing Harbor Craft**

- Reduce emissions through the use of add-on controls, cleaner fuels, and repowering with new engines
- Adopt programs 2003-2005, implement in 2005
- ARB responsible agency



## **Reduce Port Land-side Emissions Sources**

- Address port emissions in 3-step process
  - Create port specific inventories
  - Assess impacts of existing measures
  - Implement additional port-specific measures
- Adopt programs 2003-2005, implement 2003-2010
- ARB responsible agency



## **Adopt More Stringent New Engine Standards**

- Adopt federal standards or work with the IMO on international standards
  - NOx standards based on the federal Tier II and III off-road standards
  - PM standards based on state-of-the art technology
- Adopt programs 2003-2004, implement 2008-2010
- Concept for Federal action



## **Reduce Emissions from Existing Oceangoing Ships**

- Evaluate five emission reduction options
  - Cleaner fuels, Operational controls, Incentive programs, Opacity limits, Cold ironing (dockside electrical power)
- Adopt programs 2003-2005, implement 2005-2010
- Concept for Federal action/cooperative effort



## **Further Evaluation of Long-Term Measures**

- Cold-ironing for ships that frequently visit South Coast ports
  - Evaluate by 2004
  - Adoption 2005
- Reduce emissions from auxiliary engines on ships while hotelling
  - Evaluate by 2004
  - Adopt by 2006

## **Ship Retrofit Project and In-use Emissions Testing**



## **Update on Ship Retrofit Project Review of Program**

- Project designed to demonstrate feasibility of emission controls for ships
- Collaborative effort between U.S. EPA, MARAD, California air pollution control agencies, Ports, and ship operators
- Supports goal of developing economic incentive programs (per SIP)

## **Update on Ship Retrofit Project Matson Project**

- Matson Navigation has tentatively agreed to participate in the program
- Expect to retrofit main engine of the R.J. Pfeiffer in the Spring of 2004
- Seaworthy Systems expected to install water/fuel oil emulsification system
- Emissions testing pre and post retrofit will demonstrate emission reductions

## **Update on Ship Retrofit Project Matson Project (Cont'd)**

- Technology expected to result in significant NOx reductions (~20-25%)
- Testing of cleaner fuels in a Matson auxiliary engine also possible
- Funding provided by U.S. EPA, Districts, U.S. Maritime Administration, Matson, ARB, POLA, POLB

## **Update on Ship Retrofit Project Future Plans**

- Expect to initiate more projects in the future
- Looking for interested ship operators (either cargo or cruise ships)

## **Update on Ship In-Use Emissions Testing**



## **Update on Ship In-Use Emissions Testing Program Goals**

- Develop in-use testing protocol
- Gather additional data on actual in-use ship emissions, including speed reduction zone (12 knots)
- Experience with in-use testing of marine vessels for retrofit testing

## **Update on Ship In-Use Emissions Testing Maersk Project**

- Plan emissions testing of the Sine Maersk in February 2004
- MAN B&W will perform testing with observation by UC Riverside
- Funding provided by the Port of Los Angeles and the U.S. Maritime Administration

## **Update on Ship In-Use Emissions Testing Maersk Project (Cont'd)**

- Testing of main and an auxiliary engine
- Modified ISO 8178 testing protocol
- Measuring emissions of NO<sub>x</sub>, HC, CO, CO<sub>2</sub>, O<sub>2</sub>, and PM (SO<sub>x</sub> calculated)
- PM filter analysis
- Fuel and lube oil analysis